Senate Reference No. 05-2

TO: Jane Grant, Chair, Senate Executive Committee

FROM: Carol Lawton, Chair, Curriculum Review Subcommittee

DATE: June 1, 2005

SUBJECT: Proposal for Bachelor of Science in Civil Engineering

The Curriculum Review Subcommittee supports the proposed Bachelor of Science in Civil Engineering. We find that the proposal requires no Senate review.

Approving	Not Approving	Absent
C. Lawton, Chair		M. Codispoti
R. Duchovic		J. Manzer
J. Garrett		S. Wimer (student)
L. Graham		
W. Ludwin		

D. Mansour-Cole

R. Narang

D. Oberstar

J. Purse-Wiedenhoeft

S. Sarratore

B. Watts (student)

INSTITUTION: Indiana University – Purdue University Fort Wayne

COLLEGE: School of Engineering, Technology, and Computer Science

DEPARTMENT: Engineering

DEGREE PROGRAM TITLE: Bachelor of Science in Civil Engineering

FORM OF RECOGNITION TO BE AWARDED /

DEGREE CODE: Bachelor of Science / BSCE

SUGGESTED CIP CODE: 140801

LOCATION OF PROGRAM / CAMPUS CODE: IPFW / 1812

PROJECTED DATE OF IMPLEMENTATION: August 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

BACHELOR OF SCIENCE IN CIVIL ENGINEERING (BSCE)

TO BE OFFERED AT INDIANA UNIVERSITY – PURDUE UNIVERSITY FORT WAYNE (IPFW)

Objectives:

This program will prepare students for a career in the area of civil engineering. The program focuses on the latest advances in the design, construction, and maintenance of the society's infrastructure – buildings, bridges, roads, airports, dams, water supplies, and environmental systems. These areas are of great interest to industry and students nationwide, including northeastern Indiana.

Clientele to be Served:

The program is intended to serve undergraduate students who may attend on either a full-time or part-time basis. Students attracted to the program include:

- High school graduates or undecided students who want to pursue a career in the area of civil engineering,
- Current technology students who are pursuing a civil engineering technology or a construction engineering technology degree at IPFW,
- Students currently enrolled in other programs who desire a career in the area of civil engineering,
- Individuals currently employed in related positions who desire to further their education.

Curriculum:

127 total credit hours distributed as follows:

Freshman Engineering requirements	33
Core Civil Engineering	46
Civil Engineering Electives	12
Senior Capstone Design Project	6
Advanced Physics	5
Advanced Mathematics	10
General Education Courses	15

Employment Possibilities:

Graduates of the program will have excellent professional career opportunities due to the large current and projected demand for civil engineers. According to the *Indiana Workforce Development Office*, the demand for civil and environmental engineers in the State of Indiana will increase by 14.33% and 28.26%, respectively for the period 2000 – 2010. This implies 120 out of 690 annual engineering job openings in Indiana are in the areas of civil and environmental engineering. This demand applies not only to the northeastern Indiana market but also to the national markets. The *Bureau of Labor Statistics* projected that 19.44% of the total 432,000 engineering job openings during the same period will be in the same areas, second highest among all engineering disciplines after mechanical engineering (21.76%).

B. PROGRAM DESCRIPTION

1. Proposed Program

The Department of Engineering at Indiana University Purdue University Fort Wayne (IPFW) seeks to establish a Bachelor of Science in Civil Engineering program to meet the demands of students and northeastern Indiana area employers. The program focuses on the latest advances in the design, construction and maintenance of the society's infrastructure – buildings, bridges, roads, airports, dams, water supplies, and environmental systems. These areas are of great interest to industry and students nationwide, including northeastern Indiana. Indiana professional licensing requirements no longer allow graduates of engineering technology programs to take the Fundamentals of Engineering exam unless they have additional engineering course credits. In addition, following a national trend, the licensing of Professional Engineers in Indiana is rapidly moving toward requiring an ABET-accredited engineering degree. ABET-accredited civil engineering degrees in the State of Indiana are offered at Purdue University (WL), University of Notre Dame, Rose-Hulman Institute of Technology, University of Evansville, Valparaiso University, and Tri-State University. No public institution offers

ABET-accredited Civil Engineering degrees in northeastern Indiana. Therefore, there is a strong need for professionals with an ABET-accredited civil engineering degree at the baccalaureate level in northeastern Indiana. The proposed degree is in accordance with the mission of IPFW to play an important role in the cultural and economic life of northeastern Indiana, to retrain the workforce, and to respond to changes in the economy.

Objectives:

a. Provide students with a strong fundamental scientific and technical knowledge base and critical thinking skills to serve as the foundation for lifelong learning related to the civil engineering profession.

b. Provide students with a broad and well-integrated background in the concepts, theories, and methodologies needed to plan, design, analyze, develop, organize, and manage civil engineering projects.

c. Provide students with expertise in the major areas of civil engineering: structural analysis, design and reliability, transportation systems engineering, and water resources and environmental engineering.

d. Provide a degree that meets the accreditation guidelines of the Accreditation Board for Engineering and Technology (ABET).

Examples of job roles that graduates of the degree will be qualified to fill include:

project engineer	government engineer
design engineer	plant engineer
construction manager	structural engineer
environmental engineer	technical sales
highway engineer	field representative

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

a. Admission requirements are the same as those in effect for entering the current engineering programs (electrical, computer, or mechanical) at IPFW.

b. There is no prerequisite coursework or degree.

c. The BSCE degree program will attract students who desire to pursue a career in the areas of structural analysis, construction, design and reliability, transportation systems, water resources, environmental engineering, and other civil engineering related fields. The undergraduate degree in BSCE will also prepare students for graduate degree opportunities. The program will admit students on both full-time and part-time bases. The program will be marketed to new high school graduates and non-traditional students who wish to pursue a new or different career.

d. Depending on academic performance and course records, transfer students may need to take some first and second year courses to fulfill prerequisite requirements. However, course work completed at Ivy Tech State College campuses or Vincennes University will be accepted in accordance with existing transfer credit agreements. Details of these transfer credit agreements are attached in the Appendix.

e. It is not anticipated that enrollment limits will be required during the first five years. If limitations due to available laboratory and equipment resources are required, students will be admitted on a competitive basis as established by academic credentials.

f. Students in the program will be eligible for all forms of financial aid available to other IPFW students. In addition, various scholarships provided through the School of Engineering, Technology, and Computer Science are available on a competitive basis to any student admitted to the program.

3. Proposed Curriculum

a. The curriculum was developed after an extensive review of industry needs and of baccalaureate curricula offered at similar institutions. The core provides students with a strong fundamental scientific and technical knowledge base and critical thinking skills to serve as the foundation for lifelong learning related to the civil engineering profession. The specialization areas provide in-depth knowledge about structural analysis, design and reliability, transportation systems engineering, and water resources and environmental engineering. Other required courses provide a solid mathematical and science background. To earn the Bachelor of Science in Civil Engineering, students must complete 127 credit hours, distributed as follows:

Freshman Engineering Requirements: 33 credit hours

Calculus (8)

Chemistry (4)

Physics (5)

Introduction to Engineering (10)

English/Communication (6)

General Education Courses*:* 15 credit hours

IPFW General Education Program requirements

Core Civil Engineering Courses*:* 46 credit hours

Surveying (3)

Thermodynamics I (3)

Statics (3)

Dynamics (3)

Strength of Materials (3)

Measurements and Instrumentation (2)

Materials Science and Engineering (2)

Mechanics and Materials Lab (1)

Route and Construction Surveying (3)

Hydraulics (3)

Hydraulics Lab (1)

Environmental Engineering (3)

Transportation Engineering (3)

Structural Analysis I (3)

Geotechnical Engineering I (3)

Stochastics (3)

Theory of Reinforced Concrete (3)

Reinforced Concrete Lab (1)

***Technical Elective Courses**:* 12 credit hours

Choose 4 of the following courses:

Construction Management (3)

Urban Hydraulics (3)

Structural Design in Metals (3)

Geotechnical Engineering II (3)

Numerical Methods in Engineering (3)

Experimental Stress Analysis (3)

Advanced Mechanics of Materials (3)

Vibration Analysis (3)

Finite Element Analysis (3)

Introduction to Computer Graphics (3)

Vector Calculus (3)

Linear Algebra with Applications (3)

Introduction to Partial Differential Equations (3)

Introduction to Complex Analysis (3)

Statistical Methods (3)

Optics (3)

Modern Physics (3)

Environmental and Urban Geology (3)

Structural Geology (3)

Principles of Engineering Geology (3)

Methods in Applied Geophysics (3)

Geomorphology (3)

Principles of Hydrogeology (3)

Environmental Science (3)

Fate of Chemicals in the Environment (3)

Advanced Physics*:* 5 credit hours

Heat Electricity and Optics (5)

Advanced Math: 10 credit hours

Multivariate Calculus (4)

Elementary Linear Algebra (3)

Differential Equations (3)

Senior Capstone Design Project*:* 6 credit hours

Sample curriculum by semester

FRESHMAN YEAR

First Semester

Course #	Course Name	Cr	Department
ENGR 101	Introduction to Engineering	1	**Engineering**
ENGR 120	Graphical Communications and Spatial Analysis	2	**Engineering**
ENGR 121	Introduction to Computer Tools for Engineers	2	*Engineering*
MA 165	Integrated Calculus and Analytical Geometry I	4	*Mathematics*
CHM 115	General Chemistry	4	**Chemistry**
ENG W131	Elementary Composition	3	*English*
	Total	**16**	

Second Semester

Course #	Course Name	Cr	Department
ENGR 122	C and C++ Programming for Engineers	2	**Engineering**
ENGR 199	Introduction to Engineering Design	3	**Engineering**
MA 166	Integrated Calculus and Analytical Geometry II	4	*Math*
PHYS 152	Mechanics	5	*Physics*
COM 114	Fundamentals of Speech Communication	3	*Communication*
	Total	**17**	

SOPHOMORE YEAR

Third Semester

Course #	Course Name	Cr	Department
ME 250	Statics	3	*Engineering*
MA 261	Multivariate Calculus	4	*Math*
MA 351	Elementary Linear Algebra	3	*Math*
PHYS 251	Heat, Electricity, and Optics	5	*Physics*
	General Education Course (Area III)	3	
	Total	**18**	

Fourth Semester

Course #	Course Name	Cr	Department

ME 200	Thermodynamics I		3	**Engineering**
CE/ME 251	Dynamics		3	*Engineering*
CE/ME 252	Strength of Materials		3	*Engineering*
CE 200	Surveying		3	*Engineering*
MA 363	Differential Equations		3	*Math*
	General Education Course (Area IV)		3	
		Total	**18**	

JUNIOR YEAR

Fifth Semester

Course #	Course Name		Cr	Department
CE/ME 282	Measurements and Instrumentation		2	**Engineering**
CE/ME 303	Materials Science and Engineering		2	**Engineering**
CE 340	Hydraulics		3	*Engineering*
CE 371	Structural Analysis I		3	**Engineering**
CE 303	Route and Construction Surveying		3	**Engineering**
ECON E201	Introduction to Microeconomics		3	*Business*
		Total	**16**	

Sixth Semester

Course #	Course Name		Cr	Department
CE/ME 304	Mechanics and Materials Lab		1	**Engineering**
CE 343	Hydraulics Lab		1	**Engineering**
CE 473	Theory of Reinforced Concrete		3	**Engineering**
CE 392	Stochastics		3	**Engineering**
CE 383	Geotechnical Engineering I		3	**Engineering**
	General Education Course (Area VI)		3	
		Total	**14**	

SENIOR YEAR

Seventh Semester

Course #	Course Name		Cr	Department
CE 350	Environmental Engineering		3	**Engineering**
CE 474	Reinforced Concrete Lab		1	**Engineering**
CE 361	Transportation Engineering		3	**Engineering**
CE 487	Senior Capstone Design Project I		3	**Engineering**
	Civil Engineering Elective		3	
	Civil Engineering Elective		3	
		Total	**16**	

Eighth Semester

Course #	Course Name	Cr	Department

CE 488	Senior Capstone Design Project II		3	*Engineering*
	Civil Engineering Elective		3	
	Civil Engineering Elective		3	
	General Education Course (Area IV)		3	
		Total	**12**	

Technical Elective Courses

Course #	Course Name	Cr	Department
CE220	Construction Management	3	Engineering
CE440	Urban Hydraulics	3	Engineering
CE470	Structural Design in Metals	3	Engineering
CE483	Geotechnical Engineering II	3	Engineering
ME/CE373	Numerical Methods in Engineering	3	Engineering
ME/CE453	Experimental Stress Analysis	3	Engineering
ME/CE469	Advanced Mechanics of Materials	3	Engineering
ME/CE471	Vibration Analysis	3	Engineering
ME/CE480	Finite Element Analysis	3	Engineering
ECE418	Introduction to Computer Graphics	3	Engineering
MA510	Vector Calculus	3	Mathematics
MA511	Linear Algebra with Applications	3	Mathematics
MA523	Introduction to Partial Differential Equations	3	Mathematics
MA525	Introduction to Complex Analysis	3	Mathematics
STAT511	Statistical Methods	3	Mathematics
PHYS322	Optics	3	Physics
PHYS342	Modern Physics	3	Physics
G300*	Environmental and Urban Geology	3	Geosciences
G323*	Structural Geology	3	Geosciences
G336*	Principles of Engineering Geology	3	Geosciences
G423*	Methods in Applied Geophysics	3	Geosciences
G415*	Geomorphology	3	Geosciences
G451*	Principles of Hydrogeology	3	Geosciences
BIOL349*	Environmental Science	3	Biology
BIOL579*	Fate of Chemicals in the Environment	3	Biology

Courses in shade already exist

* Preliminary

Definition of General Education Courses

The General Education program is a requirement at IPFW. The IPFW definitions of the general education areas of study are shown below along with the required credit hours in each area for a bachelor's degree. The BSCE program fulfills these general education requirements.

Area I Linguistic and Numerical Foundations 9 hours

Area II	Natural and Physical Sciences	6 hours
Area III	The Individual, Culture, and Society	6 hours
Area IV	Humanistic Thought	6 hours
Area V	Creative and Artistic Expression	3 hours
Area VI	Inquiry and Analysis	3 hours

BSCE Degree

Department of Engineering

Proposed Date: Fall 2006

All engineering & technical elective courses must have a combined minimum GPA of 2.0.

Course sequencing follows the academic year, and assumes beginning the program in the Fall Semester.

P = Pre-requisite, C = Co-Requisite or Pre-requisite

For more information visit http://www.engr.ipfw.edu

1st Semester 16 credits	**MA 165 (4)** (P: MA 151 or MA 154, or placement) ("C" or better)	**CHM 115 (4)** (P: CHM 111 or 1 yr. H.S.) (C: MA 153 or MA 151)	**ENGR 101 (1)** **Area V**	**ENGR 120 (2)** (P: MA 153) **Area V**	**ENGR 121 (2)** (P: MA 153) (C: ENGR 120)	**COM 114 (3)** ("C" or better)
2nd Semester 17 credits	**MA 166 (4)** (P: MA 165) ("C" or better)	**PHYS 152 (5)** (C: MA 166)	**ENGR 122 (2)** (P: ENGR 101, ENGR 121, MA 151 or MA 154)	**ENGR 199 (3)** (C: ENGR 122)	**ENG W131 (3)** (P: ENG W130 or placement) ("C" or better)	

3rd Semester 18 credits	**MA 261 (4)** (P: MA 166) (“C” or better)	**MA 351 (3)** (P: MA 166) (“C” or better)	**PHYS 251 (5)** (P: PHYS 152) (C: MA 261)	**ME 250 (3)** (P: PHYS 152) ENGR 199) (C: MA 261)	**General** **Education (3)** **Area III**	
4th Semester 18 credits	**MA 363 (3)** (P: MA 351)	**ME 251 (3)** (P: ME 250) (C: MA 363)	**ME 200 (3)** (C: MA 261)	**ME 252 (3)** (P: ME 250) (C: MA 363)	**CE 200 (3)** (P: ENGR 120) Surveying	**General** **Education (3)** **Area IV**
5th Semester 16 credits	**CE 340 (3)** (P: ME 251) Hydraulics	**CE 371 (3)** (P: ME 252) Structural Analysis	**ME 303 (2)** (P: CHM 115, PHYS 251) (C: ME252)	**ME 282 (2)** (P:COM114, ENG W131) (C: ME 200, ME 252)	**CE 303 (3)** (P: CE 200) Route and Construction Surveying	**ECON E 201 (3)** **Area III**
6th Semester 14 credits	**CE 343 (1)** (C: CE 340) Hydraulics Lab	**CE 473 (3)** (P: CE 371) Theory of Reinforced Concrete	**ME 304 (1)** (P: ME 282, ME 303)	**CE 392 (3)** (P: MA 261) Stochastics	**CE 383 (3)** (P: ME 252, C: ME 303) Geotechnical Engineering	**General** **Education (3)** **Area VI**
7th Semester 16 credits	**CE 350 (3)** Environmental Engineering	**CE 474 (1)** (C: CE 473) Theory of Reinforced Concrete Lab	**CE 487 (3) or** **ENGR 410 (3)** (P: CE 473) Civil Engineering Design I	**Tech. Elec. (3)**	**CE 361 (3)** Transportation Engineering	**Tech. Elec. (3)**

8th Semester 12 credits	**Tech. Elec. (3)**	**Tech. Elec. (3)**	**CE 488 (3) or** **ENGR 411 (3)** (P: CE 487 or ENGR 410) Civil Engineering Design II	**General** **Education (3)** **Area IV**		

Note: This curriculum is preliminary and to be refined by civil engineering faculty.

Total credit hours: 127

b. Over 50% of the courses required for the degree are established courses. They are:

Course Name	Course Number	Times Taught in the last 3 years
Introduction to Engineering	ENGR 101	6
Graphical Communications and Spatial Analysis	ENGR 120	6
Introduction to Computer Tools for Engineers	ENGR 121	2
Introduction to Engineering Design	ENGR 199	2
Integrated Calculus and Analytical Geometry I	MA 165	6
Integrated Calculus and Analytical Geometry II	MA 166	6
Multivariate Calculus	MA 261	7
Elementary Linear Algebra	MA 351	6
Differential Equations	MA 363	6
General Chemistry	CHM 115	6
Mechanics	PHYS 152	6
Heat, Electricity, and Optics	PHYS 251	6
Thermodynamics I	ME 200	6
Statics	ME 250	6
Dynamics	ME 251	6
Strength of Materials	ME 252	6
Measurements and Instrumentation	ME 282	3
Materials Science and Engineering	ME 303	3
Mechanics and Materials Lab	ME 304	3
Elementary Composition	ENG W131	10
Fundamentals of Speech Communication	COM 114	10
Introduction to Microeconomics	ECON E201	6

General Education Courses (Areas III, IV, and VI) Every semester

The following courses have already been developed and taught at other sites in the Purdue statewide system. They will be taught at IPFW on a regular basis by the new faculty members hired for this BSCE program.

Course Name	**Course Number**	**To be offered**
Surveying	CE200	Twice a year
Construction Management	CE220	Once 3 semesters
Route and Construction Surveying	CE303	Once a year
Hydraulics	CE340	Once a year
Hydraulics Lab	CE343	Once a year
Environmental Engineering	CE350	Once a year
Transportation Engineering	CE361	Once a year
Structural Analysis I	CE371	Once a year
Geotechnical Engineering I	CE383	Once a year
Stochastics	CE392	Once a year
Urban Hydraulics	CE440	Once 3 semesters
Structural Design in Metals	CE470	Once 3 semesters
Theory of Reinforced Concrete	CE473	Once a year
Reinforced Concrete Lab	CE474	Once a year
Geotechnical Engineering II	CE483	Once 3 semesters
Civil Engineering Design I	CE487	Once a year
Civil Engineering Design II	CE488	Once a year

The following courses are specialization courses that can be offered as technical electives in the areas of geotechnical and environmental engineering. These courses are already established or to be developed, and will be taught by the faculty of the Departments of Geosciences and Biology at IPFW. A detailed course offering plan is to be further developed between the departments involved.

Course Name	Course Number	To be offered
Environmental and Urban Geology	G300	Once two years
Structural Geology	G323	Once two years
Principles of Engineering Geology	G336	Once two years
Methods in Applied Geophysics	G423	Once two years
Geomorphology	G415	Once two years
Principles of Hydrogeology	G451	Once two years
Environmental Science	BIOL349	Once a year
Fate of Chemicals in the Environment	BIOL579	Once a year

c. All courses required for this degree-completion program will be delivered by IPFW.

4. Form of Recognition

a. Upon successful completion of the degree requirements, students will be awarded the Bachelor of Science in Civil Engineering degree.

b. The suggested CIP Code for the program is 140801.

c. The diploma will read “Bachelor of Science in Civil Engineering, Purdue University, awarded at Fort Wayne, Indiana.”

5. Program Faculty and Administrators

a. The current faculty and administrators of the Department of Engineering, all full-time, who will be directly involved with the BSCE program include:

Carlos Pomalaza-Ráez, Ph.D., Chair of the Department of Engineering, Professor of Radio Frequency Communications; wireless communications networks, signal processing, pattern recognition and computer vision.

Hosni Abu-Mulaweh, Ph.D., Professor of Mechanical Engineering; convective heat and mass transfer, turbulent heat transfer, HVAC systems, laminar natural and mixed convection.

Bongsu Kang, Ph.D., Assistant Professor of Mechanical Engineering; structural dynamics and vibration, applied mechanics, system dynamics, wave propagation analysis.

Josué Njock Libii, Ph.D., Associate Professor of Mechanical Engineering; fluid dynamics and wave phenomena, stratified flow and vibration of continuous systems.

Donald Mueller, Ph.D., Assistant Professor of Mechanical Engineering; thermal sciences, machine design, numerical methods.

Nashwan Younis, Ph.D., Professor of Mechanical Engineering; solid mechanics, experimental stress analysis, experimental fracture mechanics.

Jiaxin Zhao, Ph.D., Assistant Professor of Mechanical Engineering; tribology: friction, lubrication and wear, machine design, solid mechanics, numerical methods including finite elements, and parallel computing.

Scott Moor, Ph.D., Assistant Professor of Engineering; engineering education, design of experiments, process development, spray drying

The following faculty from the Department of Engineering will also participate in the delivery of the courses in freshman engineering, engineering science, and multidisciplinary senior capstone design projects for the BSCE program:

Amit Chatterjea, Ph.D., Associate Professor of Electrical Engineering; circuits, electrical machines.

David Mauritzen, Ph.D., Assistant Professor of Electrical Engineering; electronics, computer applications, interdisciplinary applications.

Hossein Oloomi, Ph.D., Associate Professor of Electrical Engineering; control theory, robust control, singular perturbation.

Elizabeth Thompson, Ph.D., Assistant Professor of Electrical Engineering; signal processing, microprocessor embedded systems.

Gouping Wang, Ph.D., Assistant Professor of Computer Engineering; Digital System Design, Computer Architecture, VLSI design.

The following faculty from the Departments of Geosciences and Biology at IPFW will also be involved with the BSCE program by offering technical elective courses in the areas of geosciences and environmental science (See the list of Technical Elective Courses in Section 3):

Anne Argast, Ph.D., Associate Professor of Geology; Petrology, Clay mineralogy, Instrumentation using SEM and X-ray.

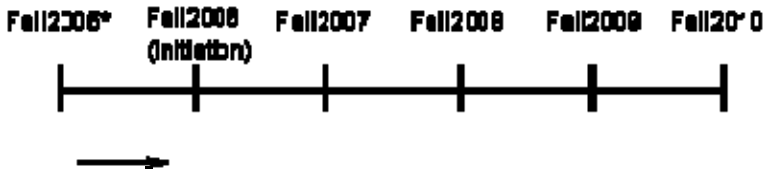
Solomon Isiorho, Associate Professor of Geology, Chair of the Department of Geosciences; Hydrogeology, Environmental Geology.

Eric Flodin, Ph.D., Assistant Professor of Geology; structural geology, evolution of brittle and fracture systems, effects of brittle fracture systems on fluid flow, petrophysics, high-resolution field mapping, numerical modeling.

Deborah Ross, Ph. D., Professor of Biology; biodegradation of environmental pollutants, bacterial source tracking to investigate the sources of fecal pollution.

b. The current course offerings of the Mechanical, Electrical, and Computer Engineering programs can support 50% of the curriculum for a Civil Engineering degree. To be able to cover the core components of the proposed curriculum (structural analysis, transportation, geotechnical, and environmental engineering), two new full-time faculty members (one specialized in the area of structures and the other one in hydraulics and environmental engineering) will be required, along with two and a half adjunct faculty in the areas of surveying, geotechnical/transportation engineering, and environmental engineering. Two staff members, a half time secretary and a half time lab technician, will be needed to support the program. The structures specialist at the associate or full professor level needs to be hired by Fall 2006 to coordinate the program and develop part of the core courses. The hydraulics and environment specialist at the assistant level needs to be hired by Fall 2007. Since ABET accreditation is critical to the success of the proposed Civil Engineering program, once the program reaches to its enrollment goal of 30[1] students at the junior and senior levels, another full-time faculty in the area of geotechnical and transportation engineering needs to be hired, replacing adjunct faculty. All new full time faculty members must have a Ph.D. degree in Civil Engineering or a closely related field. In addition, due to the nature of Civil Engineering, all new full time faculty members are strongly recommended to have a Professional Engineer (P.E.) license, but at least one full time faculty member must have a P.E. license. The following chart outlines the plan for new faculty search.

Faculty Search Plan



Area

Structural engineering (1) ▽ ▼

(Associate or full professor level
as program coordinator)

Hydraulics and

→ Environmental engineering (1) ▽ ▼

Geotechnical and

maintain 2½ until enrollment reaches to its goal

Transportation engineering, ❶❷

surveying, and Env. & Hydraulics ❸

Adjunct Faculty (2½)

s start

q complete

* Freshmen start in Fall 2006.

The appointments of all new full time faculty will be based on 75% teaching and 25% research. The following table describes the civil engineering faculty teaching load over one complete curriculum cycle.

CE Faculty Teaching Load

Semester	Faculty 1 (Associate) Area: structural	Faculty 2 (Assistant) Area: env & hydraulics	Adjunct Faculty 1	Adjunct Faculty 2	Adjunct Faculty 3
Fall 2005	*Position Advertised*		Area: surveying	Area: Geotech & transp.	Area: Env. & Hydraulics
Spring 2006	*Search Completed*				
Fall 2006	Develop Lab (0.25) Refine curriculum Promote program FTE: 0.25	*Position Advertised*			
Spring 2007	CE200 (0.25) Develop one course (0.25) Refine curriculum FTE: 0.50	*Search Completed*			
Fall 2007	CE 303 (0.25) CE 371 (0.25) Develop one course (0.25) FTE: 0.75	CE 340 (0.25) Develop Lab (0.25) FTE: 0.50 Refine curriculum Promote program			
Spring 2008	CE 473 (0.25) Develop one course (0.25) FTE: 0.50	CE 343 (1 Cr) (0.17) CE 392 (0.25) FTE: 0.42	CE 200	CE 383	
Fall 2008	CE 371 (0.25) CE 474 (1 Cr.) (0.17) CE 487 SCD (0.25) FTE: 0.67	CE 340 (0.25) CE 350 (0.25) CE 487 SCD (0.25) FTE: 0.75	CE 303	CE 361	Technical elective
Spring 2009	CE 473 (0.25) CE 488 SCD (0.25) Technical Elective (0.25) FTE: 0.75	CE 343 (1 Cr) (0.17) CE 392 (0.25) CE 488 SCD (0.25) FTE: 0.67	CE 200	CE 383	
Fall	CE 371 (0.25)	CE 340 (0.25)	CE 303	CE 361	Technical elective

2009	CE 474 (1 Cr.) (0.17) CE 487 SCD (0.25) FTE: 0.67	CE 350 (0.25) CE 487 SCD (0.25) FTE: 0.75			
Spring **2010**	CE 473 (0.25) CE 488 SCD (0.25) Technical Elective (0.25) FTE: 0.75	CE 343 (1 Cr) (0.17) CE 392 (0.25) CE 488 SCD (0.25) FTE: 0.67	CE 200	CE 383	

6. Needed Learning Resources

a. The Helmke Library holds 346,015 volumes (including bound serials), 133,977 government publications, 13,367 microfilm reels, and 523,152 other microforms for a total of 1,016,511 holdings. The Helmke Library is a depository library which provides direct access to a variety of government documents. Additionally, students have access, through the library's document delivery system, to a wide variety of options for obtaining library resource materials from local, regional, state, and national sources. The Helmke Library provides access to several databases directly related to science, engineering, and technology; specially, the library provides the following databases directly related to civil engineering topics: ACM Digital Library, Ei Engineering Village 2 (including Compendex), and Applied Science and Technology Index. By means of actual serial holdings, full-text print capabilities, and document delivery services, students and faculty have access to a wide range of technical journal articles and other educational documents. In particular, due to the already existing Civil and Architectural Engineering Technology programs, a large amount of civil engineering related books and articles are already available to the students. In addition, over the past five years, the Department of Engineering has worked with the liaison librarian to purchase holdings that support the proposed curriculum; specifically, holdings of books related to engineering mechanics, engineering science, and computer aided engineering have significantly increased. The book holdings for specific topics such as transportation engineering, hydraulics, and environmental engineering will be given focused attention for future purchases.

The proposed BSCE program will primarily use facilities of the Department of Engineering, including CAD, Materials and Mechanics, and Fluid Mechanics Laboratories. In addition, Building Systems and Soils Mechanics Laboratories from the Department of Civil and Architectural Engineering Technology (CAET) will be utilized to support the proposed civil engineering curriculum although some updates of these labs are needed. The School of Engineering, Technology, and Computer

Science (ETCS) operates four student computer laboratories which are part of the school's network and have access to numerous engineering design licensed software. IPFW also has a number of open student computer laboratories at various locations that provide a campus-wide intranet system.

b. In order to provide students a comprehensive learning experience in civil engineering as proposed, the current laboratory facilities and equipment need initial updates. The Fluid Mechanics Laboratory requires testing equipment for water resource and management applications such as pipe networks and pump systems. The Building Systems Laboratory requires concrete materials testing machines with data acquisition system. The rapid advances in technology require that computer-based facilities and software be upgraded on an ongoing basis. This includes up-to-date general purpose and specialized computer systems along with modern electronic instrumentation. The Department of Engineering has a separate account for the support and maintenance of laboratories. A three-year laboratory plan is continuously updated to ensure that laboratory needs are properly met. It is imperative that the account for the upkeep of the Department of Engineering laboratories continues to be properly funded to be able to offer a high quality BSCE program. Shown in the table below is an estimated budget for upgrading the current Fluid Mechanics, Building Systems, and Soils Mechanics laboratories and annual operation cost.

Lab	Initial Update	Annual Operation Cost
Building Systems	$30,000	$25,000
Soils Mechanics		
Fluid Mechanics & Hydraulics	$70,000	
Total	**$100,000**	**$25,000**

In addition, reconfiguration of the current lab layouts among these three labs are required.

7. Other Program Strengths

a. In addition to a curriculum that provides a well rounded fundamental understanding of civil engineering concepts, the proposed BSCE program has a high content of multidisciplinary course work and projects. This is possible due to the existence of ABET-accredited programs in mechanical and electrical engineering, and a recently established computer engineering program within the same department. Civil engineering is one of the engineering disciplines that rapidly evolves into new dimensions as Information Technology (IT) advances. Intellegent buildings and structures, smart construction materials, and IT-based traffic monitoring systems are a few examples that indicate a strong need for knowledge in electro-mechanical engineering for civil engineers. Due to the unique nature of the Department of Engineering, students have various opportunities to work on multidisciplinary teams throughout the curriculum. The proposed curriculum includes each aspect of civil engineering: structural analysis and design, materials; transit systems analysis and design; geotechnical engineering; environmental protection and control systems; hydromechanics, water resource management systems; surveying, construction engineering; engineering economics.

b. Other than regular consultations and visits to campuses that offer an accredited Civil Engineering degree, cooperative efforts with other educational institutions are not projected. Course work completed at Ivy Tech State College campuses or Vincennes University will be accepted in accordance with existing transfer credit agreements (see Appendix for details). There will be extensive efforts to involve local industry in the development of this program. These efforts are already underway through the industrial advisory board of the Department of Engineering and the Advocates Board of the School of Engineering, Technology, and Computer Science.

C. PROGRAM RATIONALE

1. Institutional Factors

a. The proposed BSCE degree is in accordance with the mission and scope of IPFW to play an important role in the cultural and economic life of northeastern Indiana, and to retrain the workforce and respond to changes in the economy. The proposed degree provides a professional program that is needed in northeastern Indiana. The program focuses on the latest advances in the design, construction and maintenance of the society's infrastructure – buildings, bridges, roads, airports, dams, water supplies, and environmental systems. These areas are of great interest to industry and students nationwide, including northeastern Indiana. Indiana professional licensing requirements no longer allow graduates of engineering technology programs to take the Fundamentals of Engineering exam unless they have additional engineering course credits. In addition, following a national trend, the licensing of Professional Engineers in Indiana is rapidly moving toward requiring an ABET-accredited engineering degree. Thus, there is a growing need for professionals with an ABET-accredited civil engineering degree at the baccalaureate level in northeastern Indiana. The undergraduate degree in BSCE will also prepare students for graduate degree opportunities.

b. The planning process was initiated during AY 2002/2003 by the faculty of the Department of Engineering. Members of the Industrial Advisory Committee of the Department of Engineering strongly encouraged IPFW to offer a high quality degree in civil engineering. They predicted a significant demand for civil engineering graduates. Incoming freshman students had also started to inquire more and more about the availability of this degree during the summer orientation periods. The need for this degree was also highlighted by the employment demand projections compiled by the Bureau of Labor Statistics (nationwide) and by the Indiana Department of Workforce Development (statewide).

A pre-proposal to offer the BSCE degree was prepared, submitted, and approved in AY 2003/2004. Since 2002, two professors of mechanical engineering with a strong background in structural analysis and design and one professor of civil engineering technology, whose professional specialties are geotechnical and transportation engineering, have developed the proposed civil engineering curriculum after extensive research on industry needs and BSCE curricula offered at similar institutions. A full program proposal to offer the BSCE degree was prepared and approved by the faculty of the Department of Engineering in AY 2004/2005. In 2005, the program was approved by the faculty assembly of the School of Engineering, Technology, and Computer Science.

c. The proposed program is expected to enroll students who are new to the campus as well as some current engineering technology students, in particular civil engineering technology majors, who decide to pursue a BSCE degree.

d. A number of existing courses in the mechanical engineering program are used to support the BSCE program. Existing courses in freshman engineering, mathematics, the physical sciences, and humanities will also be utilized. In addition, the Department of Geosciences and the Department of Biology at IPFW will participate in the program through offering technical elective courses in the areas of geosciences and environmental engineering. The proposed program is expected to attract new engineering students to IPFW. This will result in increasing enrollment in the Departments of Engineering, Mathematical Sciences, Physics, Chemistry, Geosciences, and Biology.

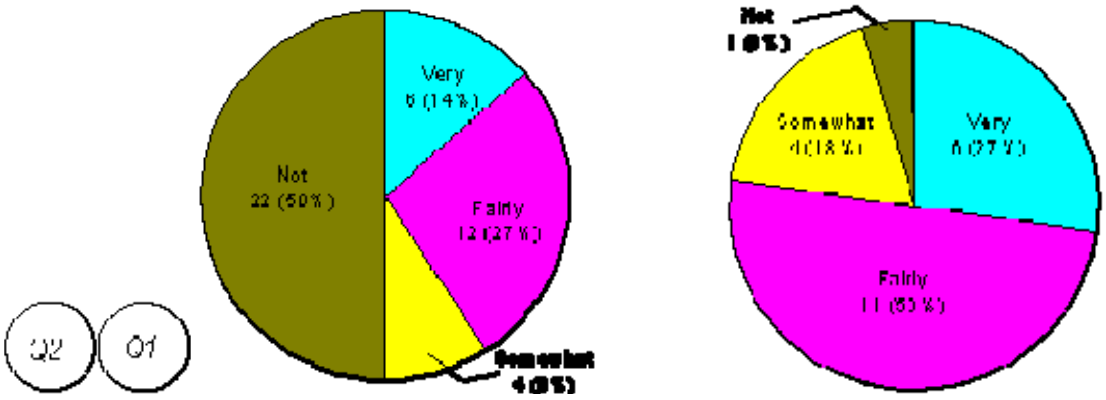
2. Student Demand

a. The IPFW admission office reports that questions from high school students about a civil engineering degree have been on the rise during the last decade. Incoming freshmen often ask about the availability of this type of degree during the orientation sessions. In order to determine current student interest in a BSCE program, in the Spring 2004 semester, the Department of Engineering conducted internal surveys with two different student groups; 44 students enrolled in ENGR101 (Introduction to Engineering) and 71 CAET students (including interior design majors) at all levels. The survey included a brief description of the objectives and goals of the program as well as the job roles that graduates of the degree program would be qualified to fill. The questions asked are:

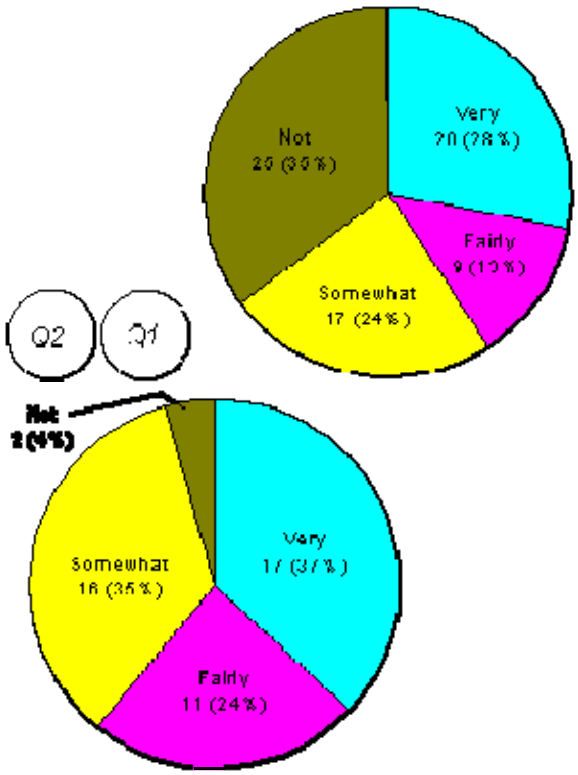
Q1: How interested would you be in pursuing BSCE?

Q2: How interested would you be in pursuing BSCE <u>at IPFW</u>?

The survey results are presented below. The questions are indicated in the center of each pie. It can be noticed that the same percentage (41%) of students in both survey groups express positive interests ("very" and "fairly") in pursuing BSCE. In addition, almost the same number of students who express positive interests for Q1 say they would pursue their degree at IPFW. It should be noted that if those interior design majors who participated in this survey are not counted, the percentage for positive interests from the CAET survey group would increase. These survey results indicate a strong student demand for the proposed civil engineering program.



Survey results from 44 freshmen enrolled in ENGR101.



Survey results from 71 students currently enrolled in the CAET programs.

A conservative estimate of the rate of growth of the proposed BSCE program after the third year of its implementation is around 25% per year to meet the demand in the northeastern Indiana area. Enrollment projections are based on experience with the existing engineering programs, discussions with current and prospective students, and discussions with members of the Industrial Advisory Board of the Department of Engineering

b. Enrollment projections for the BSCE program are shown in Table 1 - Program Enrollments and Completions. Projections use FY 2006 as a baseline and are based on a conservative annual growth rate (25%). The enrollment projections, credit hours, FTEs, and headcount include all four years of the BSCE program.

3. Transferability

Students will incur no problems in transferring credits earned in the proposed BSCE program to other similar (ABET-accredited) programs in the state or in the nation. Credits earned at community colleges, such as Ivy Tech State College, in the areas of general education and basic science and mathematics are generally transferable. Articulation agreements with Ivy Tech and with Vincennes University are currently in place for transfer of course work to IPFW and are shown in the Appendix.

4. Access to Graduate and Professional Programs

Upon completion of a BSCE, students will be prepared to enter graduate programs that emphasize further study of civil engineering and/or environmental engineering. M.S. and Ph.D. degrees in civil engineering exist at major universities in the State of Indiana and nationally.

5. Demand and Employment Factors

News media continually report that the nation's infrastructure – highways, ports, roads, bridges, dams, airports, public buildings, mass transit, railroads, and water management – is in need of extensive repair and modernization. Furthermore, many countries in the

world are expected to expand infrastructure construction. Employment projections compiled by the Bureau of Labor Statistics and the Indiana Workforce Development Office highlight the projected large demand for professionals in civil and environmental engineering, not only in northeastern Indiana but also statewide and nationwide. In the state of Indiana, among 690 annual average engineering job openings, 120 jobs are from the fields of civil and environmental engineering, which is the second highest after mechanical engineering. Furthermore, in the areas of northeastern Indiana, civil and environmental engineering is one of few engineering disciplines with positive growth rates in terms of new job openings. Taking account of the crossover professionals such as architects and surveyors, the demand for civil engineers would be even higher. These projections are summarized in the following tables:

The projections for the State of Indiana, compiled by the Indiana Department of Workforce Development Office, are:

Base Period: 2000

Projected Period: 2010

Area: State of Indiana

Occupation	Number of Jobs		Increase	**Annual** Average
	2000	2010	(%)	Total Openings
Engineers	32,940	32,760	–0.55	690
Civil Engineers	**3,420**	**3,910**	**14.33**	**100**
Environmental Engineers	**460**	**590**	**28.26**	**20**
Mechanical Engineers	8,040	8,020	–0.25	240
Electrical Engineers	2,810	2,670	–4.98	50
Computer H/W Engineers	320	400	25.00	20
Industrial Engineers	6,050	5,740	–5.40	100
Chemical Engineers	760	810	6.58	40
Biomedical Engineers	290	380	31.03	20
Civil Engineering Technicians	960	1,170	21.88	40
Architects & Surveyors	3,020	3,610	19.54	120

The projections for the nation, prepared by the Bureau of Labor Statistics, are:

Base Period: 2000

Projected Period: 2010

Area: Nationwide

Occupation	Number of Jobs		Increase	Total New Job
	2000	2010	(%)	Openings (*)

Engineers	1,465	1,603	9.42	432
Civil Engineers	**232**	**256**	**10.34**	**60**
Environmental Engineers	**52**	**66**	**26.92**	**24**
Mechanical Engineers	221	251	13.57	94
Electrical Engineers	157	175	11.46	47
Computer H/W Engineers	60	75	25.00	23
Industrial Engineers	154	161	4.55	33
Chemical Engineers	33	34	3.03	7
Biomedical Engineers	7	9	28.57	2
Civil Engineering Technicians	94	105	11.70	30
Architects & Surveyors	196	229	16.84	61

Numbers in thousands of jobs

(*) Due to growth and net replacements

The projections for northeastern Indiana (Regions 2, 3, 5, and 6 in the map), prepared by the Indiana Department of Workforce Development office, are:

Base Period: 2000

Projected Period: 2010

Area: Northeastern Indiana

Occupation	Number of Jobs		Increase
	2000	2010	(%)
Engineers	11,880	11,430	–3.79
Civil Engineers	**840**	**900**	**7.14**
Health/Safety Engineers[1)]	**120**	**130**	**8.33**
Mechanical Engineers	2840	2770	–2.46
Electrical Engineers	1030	900	–12.62
Electronics Engineers[2)]	680	650	–4.41
Industrial Engineers	2580	2420	–6.20
Chemical Engineers	140	150	7.14
Biomedical Engineers[3)]	70	90	28.57
Civil Engineering Technicians[4)]	180	210	16.67

Architects & Surveyors[5)]	690	770	11.59

1) Considered as environmental engineers

2) Computer engineers are excluded

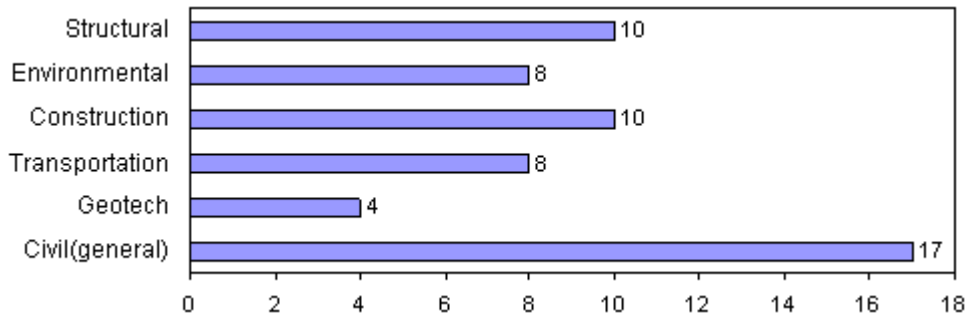
3) Solely in Region 2

4) Data in Regions 5 and 6 are not available

5) Data in Region 5 are not available

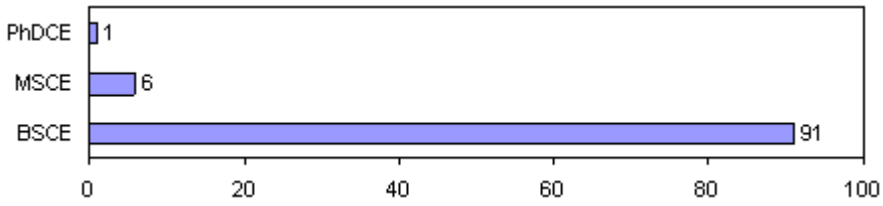
In addition, in order to determine the interest level of prospective employers about the proposed BSCE program, the Department of Engineering conducted an independent survey with civil engineering/construction firms located in northeastern Indiana. The survey included a description of the objectives and goals of the program. About 100 firms were selected, and 27 participated in the survey. The key survey results are summarized in the tables and charts below. These survey results show that there exists a strong demand from the local industry for the proposed BSCE program at IPFW.

Question: Primary civil engineering discipline(s) of your company or institution



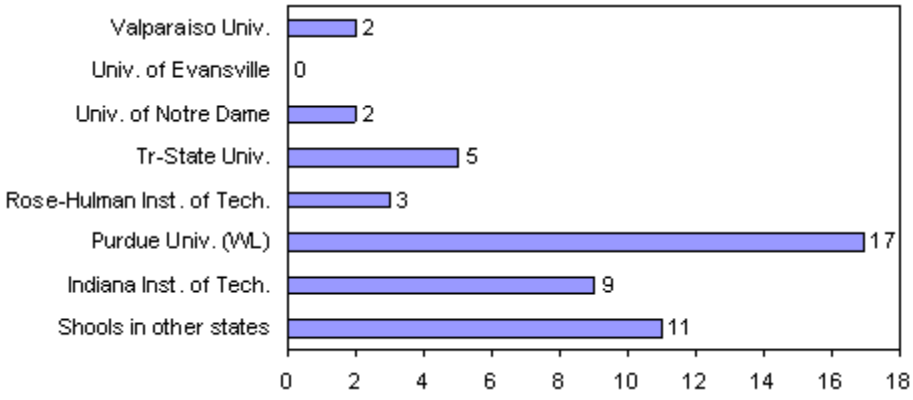
Number of firms

Question: Number of current employees with civil engineering degree



Number of employees (total of 27 firms)

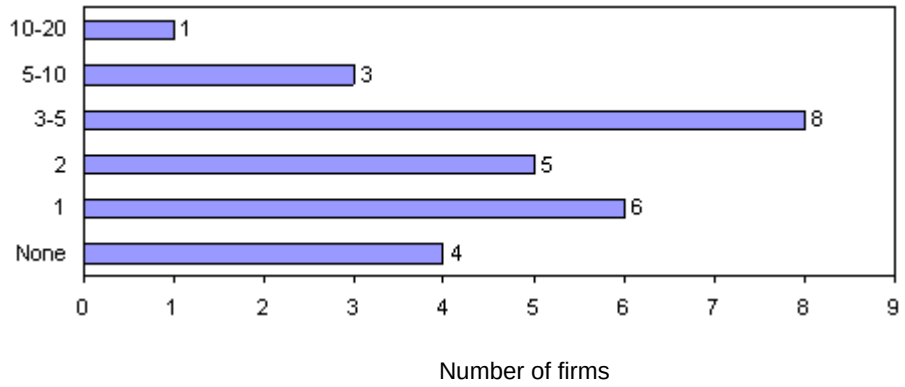
Question: If your company has employees with civil engineering degree, are they graduates from



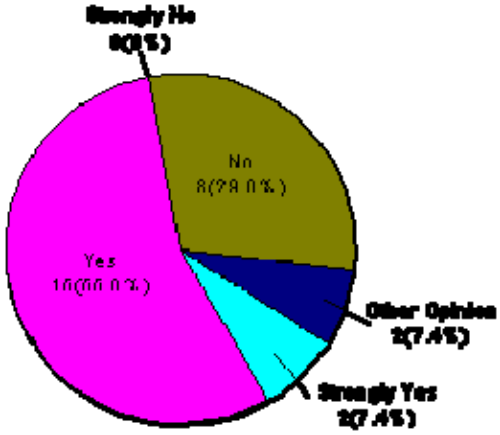
Number of firms

Note: The civil engineering program at Indiana Institute of Technology is not ABET-accredited.

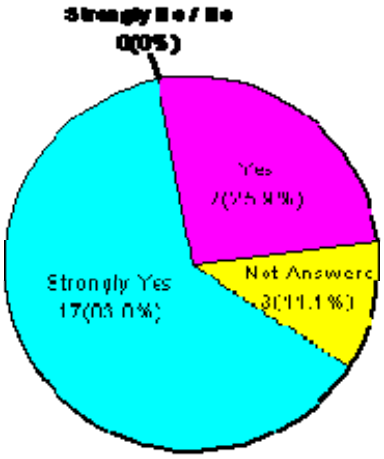
Question: Estimate the number of civil engineers that your company may hire in the next 5 years



Question: Is it difficult for you to hire civil engineers?



Question: No public institution offers ABET-accredited civil engineering degrees in the northeastern Indiana. In your opinion, should IPFW offer an accredited civil engineering degree?


Strongly No / No
0(0%)
Yes
7(25.9%)
Not Answered
3(11.1%)
Strongly Yes
17(63.0%)

6. Regional, State, and National Factors

a. ABET-accredited civil engineering programs in the State of Indiana are offered by 6 universities: Purdue University at West Lafayette, University of Evansville, University of Notre Dame, Rose-Hulman Institute of Technology, Valparaiso University, and Tri-State University. No public institution, except Purdue University at West Lafayette, offers civil engineering degrees in the State of Indiana. The curricula for these degrees are similar to the proposed degree; however, many students seeking the degree in northeastern Indiana do not have the financial or transportation means necessary to attend these programs.

b. Indiana professional licensing requirements no longer allow graduates of engineering technology programs to take the Fundamentals of Engineering exam unless they have additional engineering course credits. In addition, following a national trend, the licensing of Professional Engineers in Indiana is rapidly moving toward requiring an ABET-accredited engineering degree. Therefore, ABET accreditation is critical to the success of the program. The plan is to submit the BSCE program for ABET accreditation as soon as possible once the program has its first graduates. The expected year for first graduates is 2009. Once accredited, it is expected that the program will attract more students.

D. PROGRAM IMPLEMENTATION AND EVALUATION

1. Quality and Efficiency

Annual assessment reviews of each program are conducted by every department in accordance with IPFW requirements. These assessment reviews include goals and measurements of success for the goals of each program. Measures used for assessment include interim evaluations, exit surveys, and surveys of alumni and employers. A continuous improvement component is contained in each assessment plan. National ABET accreditation requirements will begin using assessment-based evaluations during the next accreditation cycle (2005) of the engineering programs at IPFW. The department of engineering has maintained continuous ABET accreditation for the mechanical and electrical engineering programs for the last 14 years, and it is expected that the proposed program will be implemented effectively and build on the department's strengths and experience.

2. Appropriateness

All graduates will be part of follow-up studies after they have been on the job for one year and again after three years. A comprehensive assessment plan will be developed by the Department of Engineering to evaluate the strengths and weaknesses of the program and to implement a continuous improvement cycle.

3. Availability of Similar Programs

A similar program is currently offered at Tri-State University at Angola in northeastern Indiana. However, no public institution offers a similar program in northeastern Indiana.

4. Personal and Social Utility

IPFW engineering students are involved in active student organizations. These organizations include the American Society of Mechanical Engineers (ASME) student chapter, the American Society of Civil Engineers (ASCE) student club, the Society of Automotive Engineers (SAE) student chapter, the Society of Manufacturing Engineers (SME) student chapter, the Society of Women Engineers (SWE) student chapter, the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) student chapter, and the Institute of Electrical and Electronics Engineers (IEEE) student chapter. Engineering students are also involved in campus-wide organizations such as Indiana Purdue Student Government Association (IPSGA), Student Activity Board (SAB), Delta Gamma, National Pan-Hellenic Organization, Phi Kappa Theta, Pi Beta Phi, and Sigma Phi Epsilon. Engineering students have also been very involved in outreach activities such as the Lego Robotics Tournaments, Robotics Summer Camps for children, Robotics Workshops for Teachers, and design competitions sponsored by the SAE, ASME, and the IEEE.

5. Student Demand

Survey data, interviews with current and prospective students, and feedback from the Industry Advisory Board indicate a strong student demand for the educational opportunities offered by the civil engineering program. Conservative projected enrollments are shown in Table 1. Continuous monitoring of actual enrollment and retention rates will be conducted along with the annual program assessment to show student demand and satisfaction level.

6. Student Access

IPFW has a strong commitment to facilitate student academic success. Many programs and tutoring opportunities are available through Academic Support sponsored by the Department of Mathematical Science, Department of English and Linguistics, and Center for Academic Support and Advancement Administration to promote student success. In addition, IPFW also has an office of Services for Students with Disabilities to help people with disabilities achieve equal opportunity to participate in, contribute to, and benefit from all university programs, services, and activities.

7. Flexibility of Program Design

A main design objective of the proposed civil engineering program has been to assure that it will be accredited. Accreditation will provide assurances about program quality and will also ensure reasonable transfer credit for entry into and out of the program without major loss of credit. The continuous integration into the curriculum of advances in the areas of civil and environmental engineering will be a priority in the proposed program.

8. Market Demand

Long-term market demand for Civil Engineering graduates will be gathered from the Indiana Department of Workforce Development, State and Local Labor Market Information, and the National Bureau of Labor Statistics Report on emerging occupations. Short-term demand information will be gathered through alumni and company surveys and input from the industrial advisory board members of the Department of Engineering.

9. Inter-institutional and Inter-department Cooperation

All the courses in the program have been approved by the School of Engineering, Technology, and Computer Science. The Department of Geosciences has developed technical elective courses in Geology to support this program. The Departments of Chemistry and Physics provide the necessary basic science courses required in the BSCE curriculum.

10. Flexibility of Providing Instruction

The specialization courses of the civil engineering program will be taught by qualified full-time faculty members of the Department of Engineering and will be continuously updated to meet the rapid advances in the civil and environmental engineering areas. The program will be organized to support both full-time and part-time students through course scheduling in both day and evening time periods.

TABLE 1: PROGRAM ENROLLMENTS AND COMPLETIONS

Annual Totals by Fiscal Year (use SIS Definitions)

Campus: Indiana University - Purdue University Fort Wayne

Program: Bachelor of Science in Civil Engineering

Date: March, 2005

	TOTAL YEAR 1 FY 06-07	TOTAL YEAR 2 FY 07-08	TOTAL YEAR 3 FY 08-09	TOTAL YEAR 4 FY 09
A. PROGRAMS CREDITS HOURS GENERATED				
1. Existing Courses	200	380	600	900
2. New Courses	130	250	360	540
TOTAL	330	630	960	1440
B. FULL-TIME EQUIVALENTS (FTE)				
1. FTEs generated by Full-Time students	5	15	20	30
2. FTEs generated by Part-Time students	6	6	12	18
TOTAL	11	21	32	48
3. On-Campus Transfer FTEs	3	9	7	18
4. New-to-Campus FTEs	8	12	25	30

C. PROGRAM MAJORS (HEADCOUNT)				
1. Full-time students	5	15	20	30
2. Part-time students	10	10	20	30
TOTAL	15	25	40 10	60
3. On-Campus Transfers	5	10	30	20
4. New-to-Campus Majors	10	15	40	40
5. In-State	15	25	0	60
6. Out-of-State	0	0		0
D. PROGRAMS COMPLETIONS	0	0	5	15

TABLE 2A

TOTAL DIRECT PROGRAM COSTS AND SOURCES OF PROGRAM REVENUES

Campus: Indiana University - Purdue University Fort Wayne

Program: Bachelor of Science in Civil Engineering

Date: March, 2005

	TOTAL YEAR 1 FY 06-07	TOTAL YEAR 2 FY 07-08	TOTAL YEAR 3 FY 08-09	TOTAL YEAR 4 FY 09
A. TOTAL DIRECT PROGRAM COSTS				
1. Existing Departmental Faculty Resources				
2. Other Existing Resources	100,000	100,000	100,000	100,000
3. Incremental Resources	0	0	0	0
	250,100	308,100	308,100	308,100
TOTAL	350,100	408,100	408,100	408,100

	TOTAL YEAR 1 FY 06-07	TOTAL YEAR 2 FY 07-08	TOTAL YEAR 3 FY 08-09	TOTAL YEAR 4 FY 09
B. SOURCES OF PROGRAM REVENUE				
1. Reallocation				

2. New-to-Campus Student Fees	309,100	346,600	279,900	254,300
3. New State Appropriations				
a. Enrollment Change Funding	41,000	61,500	128,200	153,800
b. Other State Funds				
	0	0	0	0
TOTAL	0	0	0	0
	350,100	408,100	408,100	408,100

Campus: Indiana University - Purdue University Fort Wayne

TABLE 2B:

DETAIL ON INCREMENTAL OR OUT-OF-POCKET

Program: Bachelor of Science in Civil Engineering

DIRECT PROGRAM COSTS

Date: March, 2005

	TOTAL YEAR FTE	1 FY 06-07 COST	TOTAL YEAR FTE	2 FY 07-08 COST	TOTAL YEAR FTE	3 FY 08-09 COST	TOTAL YEAR FTE	4 FY COS
1. PERSONAL SERVICES								
a. Faculty	1.0	110,000	2.0	210,000	2.0	210,000	2.0	210
b. Support Staff (PT Faculty)	0	0	2.5	30,000	2.5	30,000	2.5	30
c. Other Staff (.5 sec;.5 lab)	1.0	35,100	1.0	35,100	1.0	35,100	1.0	35
TOTAL PERSONAL SERVICES		145,100		275,100		275,100		275
2. SUPPLIES AND EXPENSES								
a. General Supplies/Expenses		3,000		5,000		5,000		5,00
b. Recruiting		0		0		0		0
c. Travel		1,000		2,000		2,000		2,00
d. Library Acquisitions		1,000		1,000		1,000		1,00
TOTAL SUPPLIES AND EXPENSES		5,000		8,000		8,000		8,00

3. EQUIPMENT				
a. New equipment Necessary for Program	100,000	0	0	0
b. Routine Replacement	0	25,000		
TOTAL EQUIPMENT	100,000	25,000	25,000 25,000	25,000 25,000
4. FACILITIES	0	0	0	
5. STUDENT ASSISTANCE				
a. Graduate Fee Scholarships				
b. Fellowships	0	0	0	0
TOTAL STUDENT ASSISTANCE	0	0	0	0
	0	0	0	0
SUM OF ALL INCREMENTAL DIRECT COSTS	250,100	308,100	308,100	308,10

TABLE 3:

NEW ACADEMIC DEGREE PROGRAM PROPOSAL SUMMARY

DATE: March, 2005

I. Prepared by Institution

Institution/Location: Indiana University – Purdue University Fort Wayne

Program: Bachelor of Science in Civil Engineering

Proposed CIP Code: 140801

	YEAR 1	YEAR 2	YEAR 3	Y
	FY 06-07	FY 07-08	FY 08-09	F
Enrollment Projections (Headcount)	15	25	40	
Enrollment Projections (FTE)	11	21	32	
Degree Completions Projection	0	0	5	
New State Funds Requested (Actual)	0	0	0	
New State Funds Requested	0	0	0	

II. Prepared by CHE

New State Funds to be Considered for Recommendation (Actual)				
New State funds to be considered for Recommendation (Increases)				

CHE Code:

Campus Code:

County Code:

Degree Code:

CIP Code:

Comment :

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[1] Based upon the current size (about 50 juniors and seniors) of Mechanical Engineering program.