LEYTE STATE UNIVERSITY
6521-A Visca, Baybay, Leyte, Philippines

Office of the Secretary of the University
and of the Board of Regents

EXCERPT FROM THE APPROVED MINUTES OF THE
17th LSU Board of Regents Meeting
25 June 2004 * LNU, Tacloban City

Proposal to Offer Bachelor of Science in Industrial Engineering at the LSU-Isabel Campus

BOR RESOLUTION NO. 47, *s.* 2004

Approving the offering of the BS Industrial Engineering at the LSU-Isabel Campus effective First Semester, SY 2004-2005, as presented.

BOARD ACTION: **APPROVED**
Date : 25 June 2004
ATTACHMENT: **K**

Certified True and Correct:

DANIEL M. TUDTUD JR.
Board Secretary

cc: OVPAA 12/06
University Registrar 9:02 12/6
LSU-Isabel Campus 1/13/05

PROPOSAL TO OFFER
BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING
at the COLLEGE OF AGRO-INDUSTRIAL TECHNOLOGY
Isabel, Leyte

I. RATIONALE

Industrial Engineering, as a field of study, is concerned with the design, improvement and installation of integrated systems of people, materials, equipment and energy. It draws upon specialized knowledge and skills in the mathematical, physical and social sciences, and blended with principles and methods of engineering analysis and design. There is a growing demand for Industrial Engineers considering the rapid industrialization of the country. Thus, educational institutions have an important role in molding quality Industrial Engineers to meet this demand.

Industrialization in the Province of Leyte is rapidly accelerating. More and more industrial establishments have opted to locate in Leyte because of its proximity and ready access to unlimited supply of electrical energy. Two internationally known corporations namely, Philippine Associated Smelting and Refining Corp. (PASAR Corp.) and the Philippine Phospate Fertilizers Corporation (Philphos Fertilizers Corp.) are based in Isabel, Leyte. Other industrial firms in Leyte include: National Power Corporation (NAPOCOR), Philippines National Oil Company (PNOC), California Energy (CalEn) PEPSI Cola Manufacturing Inc., Cola Cola Bottlers Inc., and the Visayan Oil Mill.

Results of the survey among Industrial Engineers currently employed in Leyte indicate that they come from different parts of the country (Table 1). The survey also revealed that the job assignments of these Industrial Engineers are quite varied: as Managers, Supervisors, Analysts and Programmers (Table 2). It can, therefore, be expected that more job opportunities will be opened to Industrial Engineers in these companies. The projected additional employment for Industrial Engineers in the next five (5) years within the province of Leyte will be more than double (218.18%) the current figure (Table 3).

To further determine the acceptability of the proposed degree program among potential new enrollees into LSU-Isabel, a survey was conducted among senior high

school students in the municipalities of Merida and Isabel, Leyte. Results of the survey show that more than half (57%) of the students interviewed were interested to take-up an engineering degree (Table 4). About a quarter (21%) of the 364 students who preferred to take up an Engineering degree planned to take up BS Industrial Engineering (BSIE).

The proposed Bachelor of Science in Industrial Engineering (BSIE) aims to produce professionals equipped with the following competencies:

1. Knowledge on the basic principles underlying the field of industrial engineering;
2. Practical skills on how to operationalize, maintain and manage the components that make up human-machine systems;
3. Capacity to conduct research in Industrial engineering and related fields; and
4. Ability to communicate with engineers from other disciplines as well as to function as system designers and integrators.

In consideration of the fast changing technological landscape in the province of Leyte, and in other parts of the region, the LSU-Isabel Campus envisions meeting the challenge of producing highly competitive and technologically equipped Industrial Engineers to cater to the expected high demand for quality IE manpower.

Thus, the Leyte State University – Isabel Campus, hereby proposes to offer a new curricular program leading to the degree of Bachelor of Science in Industrial Engineering (BSIE).

II. TARGET CLIENTELE

1. High school graduates
2. Students from other degree programs who want to shift to BSIE
3. Graduates of other degree programs who wish to pursue Bachelor of Science in Industrial Engineering

III. EMPLOYMENT OPPORTUNITIES

Industrial Engineering graduates can be employed as:

1. Industrial Engineer
2. Planning Engineer
3. Methods Analyst
4. Systems Analyst
5. Design Engineer
6. Quality Engineer
7. Project Analyst
8. Information Analyst
9. Productivity Consultant/Specialist
10. Operations Research Analyst
11. Instructor

IV. GRADUATE PROFILE

A. Cognitive

1. Basic knowledge on the principles and practices of industrial engineering;
2. Understanding of problem-solving analysis and decision-making techniques.

B. Psychomotor

1. Ability to design, develop, implement and improve manufacturing and service systems that integrate people, materials, information, equipment and energy;
2. Basic skills in solving problems by integrating mathematical analytical and experimental skills;
3. Ability to communicate and work effectively in an inter-disciplinary manner;
4. Perform services in the form of consultation, plan preparation, specifications and estimates; and
5. Abilty to apply state-of-the-art technologies for data analysis to solve problems.

C. Affective

1. Desire to attain work professionalism;
2. Appreciation of the relationship of engineering and the global society and of their professional and ethical responsibilities; and
3. Show consciousness of safety and health in the work environment.

V. CURRICULAR OFFERINGS

A. Course Schedule

Course No.	Descriptive Title	Hours Lec	Hours Lab	Units	Prerequisites
FIRST YEAR, *First Semester*					
Engl 11	*Communications Skills I*	3	0	3	
CSci 21	*Introduction to Computers*	2	3	3	
Math 13	*College Algebra & Trigonometry*	5	0	5	
Biol 11	*General Biology*	3	3	4	
Fili 11	*Sining ng Pakikipagtalastasan At Retorika*	3	0	3	
ScSc 11	*General Sociology*	3	0	3	
PhEd 11	*Physical Fitness & Gymnastics*	2	0	(2)	
NSTP 11	*National Service Training Program*	3	0	(3)	
	Total Units			**21**	
FIRST YEAR, *Second Semester*					
Engl 12	*Communications Skills II*	3	0	3	Engl 11
Math 112	*Analytic Geometry & Calculus I*	5	0	5	Math 13
Chem 11	*General Chemistry*	3	3	4	
Phys 11	*General Physics*	3	3	4	Math 13
ESci 121	*Engineering Graphics I*	1	3	2	
ScSc 13	*Socio-Economic Systems*	3	0	3	
PhEd 12	*Rec. Games, Rhythmic & Dance*	2	0	(2)	PhEd 11
NSTP 12	*National Service Training Program*	3	0	(3)	NSTP 11
	Total Units			**21**	
SECOND YEAR, *First Semester*					
Spch 11	*Speech Communication*	3	0	3	Engl 12
Math 113	*Analytic Geometry & Calculus II*	5	0	5	Math 112
Phys 21	*College Physics*	3	3	4	Phys 11
ESci 131	*Engineering Graphics II (Autocad)*	1	3	2	Esci 121
Psyc 11	*General Psychology*	3	0	3	
Fili 12	*Panitikang Filipino*	3	0	3	Fili 11
ScSc 16	*Life and Works of Rizal*	3	0	3	
PhEd 13	*Team Sports*	2	0	(2)	
	Total Units			**23**	
SECOND YEAR, *Second Semester*					
Engl 21	*Introduction to Literature*	3	0	3	Engl 12
IEng 151	*Industrial Psychology*	3	0	3	Psyc 11
CSci103	*Computer Programming*	2	3	3	Csci 21
Math 114	*Calculus III & Diff. Equations*	5	0	5	Math 113
ScSc 14	*Phil. Soc. Prob. Land Reform/Txn*	3	0	3	

Phil 12	*Contemporary Philosophical Thoughts*	3	0	3	
PhEd 14	*Individual Sports*	2	0	(2)	
	Total Units			**20**	
THIRD YEAR, *First Semester*					
Acct 21	*Fundamentals of Accounting*	3	0	3	
IEng 148	*Industrial Process*	3	3	4	Phys 21 & ESci 131
ESci 144	*Engineering Management*	3	0	3	
Stat 21	*Elementary Statistics*	3	0	3	Math 13
ESci 116	*Math. Methods in Engineering*	3	0	3	Math 114
ESci 133	*Engineering Mechanics*	5	0	5	Phys21,
	Total Units			**21**	
THIRD YEAR, Second Semester					
ESci 126	*Electronics & Electrical Engineering*	3	0	3	Phys 21
IEng 124	*Statistical Methods*	2	3	3	Stat 21
IEng 149	*Methods Engineering*	4	3	5	IEng 147
ScSc 15	*Phil. History & Constitution*	3	0	3	
ESci 142	*Strength of Materials*	3	0	3	ESci 133
Humn 11	*Introduction to Humanities*	3	0	3	
	Total Units			**20**	
FOURTH YEAR, First Semester					
IEng 152	*Operations Research I*	3	0	3	Stat 21
ESci 145	*Managerial Accounting*	3	0	3	Acct. 21
IEng 198	*Research Planning & Manuscript Preparation*	3	0	3	Engl 12
IEng 153	*Statistical Quality Control*	3	0	3	IEng 124
ESci 134	*Engineering Economy*	3	0	3	IEng 149
ESci 143/AE 137	*Materials Science*	2	3	3	ESci 142
IEng 164	*IE Elective I*	3	0	3	
	Total Units			**21**	
FOURTH YEAR, Second Semester					
IEng 162	*Information Systems*	3	0	3	CSci 103
IEng 154	*Operations Research II*	3	0	3	CSci 103, IEng 152, Stat 21
IEng 155	*Production Planning & Control*	3	0	3	IEng 154
ESci 136	*Thermodynamics*	3	0	3	Math 113
IEng 156	*Human Factors Engineering*	3	0	3	IEng 149
ESci 146	*Fluid Mechanics*	3	0	3	ESci 133
IEng 200	*Undergraduate Thesis*	0	0	1	By arrangement
IEng 166	*IE Elective II**	3	0	3	*for* Field practice option
	Total Units			**19/21**	

FIFTH YEAR, First Semester

IEng 157	*Project Feasibility Study*	3	0	3	IEng 155	
IEng 158	*Facilities Planning & Design*	3	0	3	IEng 155	
IEng 159	*Occupational Safety & Health*	3	0	3	IEng 156	
IEng 161	*Systems Engineering*	3	0	3	IEng 134, Acct 145	
Ethc 21	*Prof. Ethics & Values Formation*	3	0	3		
EnSc 21	*Environmental Science*	2	3	3		
IEng 168	*IE Elective II**	3	0	3	*for* Field practice option	
IEng 199	*Undergraduate Seminar*	0	0	1	By arrangement	
IEng 200	*Undergraduate Thesis*	0	0	1	By arrangement	
	Total Units			**20/22**		

FIFTH YEAR, Second Semester

IEng 200	*Undergraduate Thesis*	0	-	4	By arrangement
IEng 200*a*	*Field Practice*	0	-	6	By arrangement
	Total Units			**4/6**	

B. Course Analysis

1. ***General Education***

Course	Description		No. of Units
<u>Language and Humanities</u>			
Engl 11	Communications Skills I		3
Engl 12	Communications Skills II		3
Engl 21	Introduction to Literature		3
Fili 11	Sining Ng Pakikipagtalastasan at Retorika		3
Fili 12	Panitikang Filipino		3
Humn 11	Introduction to Humanities		3
Phil 12	Contemporary Philosophical Thoughts		3
Spch 11	Speech Communication		3
		Sub-total	24
<u>Mathematics and Natural Sciences</u>			
Math 13	College Alegbra & Trigonometry		5
Phys 11	General Physics		4
Chem 11	General Chemistry		4
Biol 11	General Biology		4
		Sub-total	17

	Social Sciences			
	Psyc 11	General Psychology		3
	ScSc 11	General Sociology		3
	ScSc 13	Socio-Economic Systems		3
	ScSc 14	Phil. Sco. Prob. Land Reform & Taxation		3
			Sub-total	12
	Mandated Courses			
	ScSc 15	Philippine History & Constitution		3
	ScSc 16	Life and Works of Rizal		3
			Sub-total	6
2.	**Fundamental Courses**			
	Stat 21	Elementary Statistics		3
	Acct. 21	Fundamentals of Accounting		3
	CSci 21	Introduction to Computers		3
	Phys 21	College Physics		4
	CSci 103	Computer Programming		3
	EnSc 21	Environmental Science		3
	Ethc 21	Prof. Ethics and Values Formation (Eng'g Laws and Ethics)		3
			Sub-total	22
3.	**Engineering, Math and Allied Courses**			
	a. Basic Engineering Sciences			
	ESci 116	Advanced Engineering Mathematics		3
	ESci 121	Engineering Graphics I		2
	ESci 126	Electronics & Electrical Engineering		3
	ESci 131	Engineering Graphics II		2
	ESci 133	Engineering Mechanics		3
	ESci 134	Engineering Economy		3
	ESci 136	Thermodynamics		3
	ESci 142	Strength of Materials		3
	ESci 143	Material Science		3
	ESci 146	Fluid Mechanics		3
	b. Basic Mathematics Courses			
	Math 112	Analytic Geometry & Calculus I		5
	Math 113	Analytic Geometry & Calculus II		5
	Math 114	Calculus III & Differential Equation		5
	c. Allied Sciences			
	ESci 144	Engineering Management		3
	ESci 145	Managerial Accounting		3
			Sub-total	49

d. Major Engineering Courses

IEng 124	Statistical Methods		3
IEng 148	Industrial Processes		4
IEng 149	Methods Engineering		5
IEng 151	Industrial Psychology		3
IEng 152	Operations Research I		3
IEng 153	Statistical Quality Control		3
IEng 154	Operations Research II		3
IEng 155	Production Planning & Control		3
IEng 156	Human Factors Engineering		3
IEng 157	Project Feasibility Study		3
IEng 158	Facilities Planning & Design		3
IEng 159	Occupational Safety & Health		3
IEng 161	Systems Engineering		3
IEng 162	Information Systems		3
IEng 164	IE Elective I		3
IEng 166	IE elective II *for* Field practice option		3
IEng 168	IE Elective III *for* Field practice option		3
IEng 198	Research Planning and Manuscript Preparation		3
IEng 199	Undergraduate Seminar		1
IEng 200a/200	Field Practice/Thesis		6
		Sub-total	**58/64**

SUMMARY OF UNITS

	Thesis Option	**Field Practice Option**
General Education	59	59
Fundamental Courses	22	22
Engineering Courses		
Basic Engineering Sciences	28	28
Basic Math Courses	15	15
Allied Sciences	6	6
Major Engineering Courses	68	68
NSTP	(6)	(6)
P.E.	(8)	(8)
Grand Total	**188**	**194**

VI. COURSES FOR INSTITUTION

A. Basic Engineering Courses

1. **ESci 116 – Mathematical Methods in Engineering**

Description: Analytical solutions and numerical integration of linear ordinary differential equations; Fourier series and integrals; Laplace transformation; partial differential equations; vector analysis and linear transformations.

Prerequisite: none
Credit : 3 units; (3 hours/week: lec)

***Rationale*:** This course expects to develop the students' basic understanding of linear analysis as applied to algebraic and differential equations.

2. **ESci 121 - Engineering Graphics I**

Description: Basic sketching and drawing, orthographic projection, isometric drawing and sectioning; assembly drawing and sectioning; exploded views, descriptive geometry.

Prerequisite: none
Credit : 2 units; (4 hours/week: 1 lec, 3 lab)

***Rationale*:** This course familiarizes the students with the basic techniques and practices of engineering drawing, the elements and composites relevant to the field of engineering designs and constructions.

3. **ESci 126 – Electronics and Electrical Engineering**

Description: Electric circuits and devices, electromagnetic gadgets

Prerequisite: Physics 21 (College Physics)
Credit: 3 units; (3 hours/week: lec)

***Rationale*:** This course teaches the students the principles of semi-conductors, its utilization for electronic devices and electricity, which do much part to get the society going.

4. **ESci 131 – Engineering Graphics II**

Description: Intersection and development, thread forms and fundamentals of computer-aided drafting.

Prerequisite: ESci 121 (Engineering Graphics I)
Credit: 2 units; (4 hours/week: 1 lec, 3 lab)

***Rationale*:** This course provides the students the knowledge on the practical application of engineering design using AutoCAD.

5. **ESci 133 – Engineering Mechanics**

Description: Static and dynamic equilibrium, friction, centroids and inertia, motion of particles and rigid bodies, force, mass and acceleration, work and energy, impulse and momentum.

Prerequisite: Physics 21 (College Physics); Math 113 (Analytic Geometry and Calculus II)
Credit : 5 units; (5 hours/week: lec)

***Rationale*:** This course familiarizes the students with the fundamentals of mechanics that are necessary in identifying engineering problems and applications.

6. **ESci 134 – Engineering Economy**

Description: Cost concepts, time-value of money, cash-flow analysis, cost/benefit analysis, after-tax analysis, capital budgeting, inflation.

Prerequisite: Acct 21 (Fund. of Acctg.) and ScSc 13 (Socio-Econ. Systems)
Credit : 3 units; (3 hours/week: lec)

***Rationale*:** This course provides the students the knowledge on economic analysis for decision making in engineering design, manufacturing equipment and industrial projects.

7. **ESci 136 - Thermodynamics**

Description: Basic laws of thermodynamics; characteristics of gases, vapor and mixture.

Prerequisite: Math 114 (Calculus III & Differential Equations)
Credit : 3 units; (3 hours/week: lec)

***Rationale*:** This course introduces to the students the relation between heat and other forms of energy, which have great impact in the industry and society.

8. **ESci 142 – Strength of Materials**

Description: Elementary stress and strain analysis, design of structural elements based on equilibrium and materials properties.

Prerequisite: ESci 133 (Engineering Mechanics)
Credit : 3 units; (3 hours/week: lec)

***Rationale*:** This course prepares the students to analyze and predict deflections based on stresses, strains, and shearing, bending, moments and design beams.

9. **ESci 143 – Material Science**

Description: Structure and composition of various industrial materials and their alternatives, properties and behavior of materials in the service environment; ferrous and non-ferrous metals and alloys, ceramics, rubber, plastics, organic and composite materials.

Prerequisite: ESci 142 (Strength of Materials)
Credit: 3 units; (5 hours/week: 2 lec; 3 lab)

***Rationale*:** This course will provide the students the capability to select the appropriate industrial materials for use in engineering applications using destructive and non-destructive testing, as well as learn to test and design for fracture resistance.

10. **ESci 144 – Engineering Management**

Description: Historical perspective of management thought and industrial organizational management; basic managerial functions of planning, organizing, staffing, leading and controlling.

Prerequisite: COI
Credit : 3 units; (3 hours/week: lec)

***Rationale*:** This course introduces the fundamental principles of management to the third year Industrial Engineering students. The course lays the foundation for advanced courses in the areas of engineering management, technology and management of information systems.

11. **ESci 145 – Managerial Accounting**

Description : Analysis of business information and financial statements; management of cash and accounting for business decisions.

Prerequisite: Acct 21 (Fundamentals of Accounting)
Credit : 3 units; (3 hours/week: lec)

***Rationale*:** This provides the students a more comprehensive study of accounting principles and the application of these principles to a wide range of business situations.

12. **ESci 146 – Fluid Mechanics**

Description: Principles of hydrostatics, hydraulics, hydromechanics and aerodynamics

Prerequisite: ESci 133 (Engineering Mechanics)
Credit : 3 units; (3 hours/week: lec)

***Rationale*:** The course exposes the students to the mechanics of fluid flow that uses the basic laws of conservation of mass, momentum and energy of fluid systems.

B. MAJOR ENGINEERING COURSES

1. **IEng 124 – Statistical Methods**

Description: Z-test, t-test, linear and non-linear multiple regression analysis, simple and partial correlation analysis of variance and covariance.

Prerequisite: Stat 21 (Elementary Statistics)
Credit : 3 units; (3 hours/week: lec)

***Rationale*:** This course equips the students with various statistical concepts needed in numerous statistical investigations and hypothesis testing.

2. **IEng 148 – Industrial Processes**

Description: Process laboratory: woodworking, metal molding, machining, machine shop practice and foundry.

Prerequisite: ESci 131 (Eng'g Graphics II); Phys 21 (College Physics)
Credit: 4 units; (6 hours/week: 3 lec, 3 lab)

***Rationale*:** This course provides hands-on activities on handling industrial laboratory equipment and materials. It also exposes the students to various production processes and train them to formulate acceptable solutions to observed industrial engineering problems.

3. **IEng 149 – Methods Engineering**

Description: Methods study, charting techniques, time and motion study, workplace design principles, job evaluation and compensation.

Prerequisite: Stat 21 Elementary Statistics
Credit: 5 units; (7 hours/week: 4 lec, 3 lab)

Rationale: This course provides the fundamentals of work study.

4. **IEng 151 – Industrial Psychology**

Description: Personnel management, motivation at work, personnel management, training and development, leadership and inter-personal processes.

Prerequisite: Psyc 11 General Psychology
Credit: 3 units; 3 hours/week (lecture only)

Rationale: This course train the students in investigating problems and situations found in business firms and industries. It will expose them to the reality of employee-employer relation and man-machine relation.

5. **IEng 152 – Operations Research I**

Description: Introduction to the fundamentals of operations research and modeling using the basic deterministic methods of linear programming, network models and non-linear programming.

Prerequisite: Stat 21 (Elem. Stat.); ESci 116 (Advanced Engineering Math)
Credit: 3 units; (3 hours/week: lec)

Rationale: This course provides students with the basic applications of scientific methodology as it applies to business problems; systems concept in problem analysis and mathematical modeling.

6. **IEng 153 – Statistical Quality Control**

Description: Introduction to the philosophies on quality and productivity, statistical process control; acceptance sampling and reliability theory.

Prerequisite: IEng 124 (Statistical Methods)
Credit: 3 units; (3 hours/week: lec)

Rationale: This course provides students knowledge on the application of statistical methods to help select and compare designs and products for quality control.

7. **IEng 154 – Operations Research II**

Description: Integer programming; network analysis; decision theory; dynamic programming; queuing theory; Markov processes; simulation; and non-linear programming.

Prerequisite: IEng 152 (Operations Research I); CSci 103 (Comp. Prog.)
Credit: 3 units; (3 hours/week: lec)

Rationale: This course introduces the students advance applications of scientific methodology to business problems, systems concept, team in problem analysis and solution, and mathematical modeling.

8. **IEng 155 - Production Planning and Control**

Description: Production planning and control, forecasting techniques, inventory management and control, materials management, capacity planning, scheduling, manufacturing strategy and technology.

Prerequisite: IEng 154 (Operations Research II)
Credit: 3 units; (3 hours/week: lec)

Rationale: This course provides the students the basics of production planning and control with the need of modern manufacturing organizations in mind.

9. **IEng 156 – Ergonomics**

Description: Study of the relationships between people and their work, machines, information and environment.

Prerequisite: IEng 149 (Methods Engineering)
Credit: 3 units; (3 hours/week: lec)

Rationale: This course introduces the students the basic research methods and principles in ergonomics that provide more efficient and comfortable places for the work environment. It will include information processing and the effect of thermal factors, noise, vibration and illumination.

10. **IEng 157 – Project Feasibility Study**

Description: Aspects and categories of pre-investment studies; phases of project feasibility studies; project development, evaluation and management; tax schemes and entrepreneurship.

Prerequisite: IEng 155 (Production Planning & Control)
Credit: 3 units; (3 hours/week: lec)

Rationale: This course provides the students a working knowledge on preparing project studies. This will help students identify, solve and present substantive reports on problems actually faced by the business community.

11. **IEng 158 – Facilities Planning and Design**

Description: Material flow; location and layout of facilities; manufacturing processes design; materials handling; production and assembly; receiving storage and distribution; auxiliary production activities; safety.

Prerequisite: IEng 155 (Production Planning & Design)
Credit: 3 units; (3 hours/week: lec)

Rationale: This course provides the students the knowledge and skills in preparing plans and designs of manufacturing facilities which standards are internationally acceptable.

12. **IEng 159 - Occupational Safety and Health**

Description: Principles of industrial prevention and safety.

Prerequisite: IEng 156 (Human Factors Engineering)
Credit: 3 units; (3 hours/week: lec)

Rationale: This course introduces the students to the principles of industrial prevention and safety. It will also emphasize accident analysis selection and application of remedy/ corrective actions.

13. **IEng 161 – Systems Engineering**

Description: Design study of complex industrial engineering systems including the modeling of manufacturing or service systems based on demand, materials, capacity, location, man-machine, computer integration and information requirements.

Prerequisite: IEng 157 (Project Feasibility Study)
Credit: 3 units; (3 hours/week: lec)

Rationale: This course provides students with the synthesis of the techniques and the methodologies previously covered in other courses taken by the students. Each student participates in a comprehensive design project.

14. **IEng 162 - Information Systems**

Description: Basic data information concepts; appropriate theoretical concepts of decision making; structured analysis methodologies; Information systems development methodologies; Database management; Decision support systems; Expert systems.

Prerequisite: CSci 103 (Computer Programming)
Credit: 3 units; (3 hours/week: lec)

Rationale: This course provides the students with the concepts of information technology and its importance within the framework of management of organization and the ability to exploit continuous innovations in order to stay competitive in business.

C. SUGGESTED ELECTIVE FOR PRODUCTION ENGINEERING

1. **IEng 164 - Computer Aided Manufacturing**

Description: Application of computer programs in machining and material handling; integration of computer aided design (CAD) with computer aided manufacturing (CAM).

Prerequisite: COI
Credit: 3 units; (3 hours/week: lec)

Rationale: This course provides knowledge on the use of computer program applications in the manufacturing process.

2. **IEng 166 - Total Productive Maintenance and Reliability**

Description: Maintenance-centered strategies for improvements in cost, quality and speed in a manufacturing organization.

Prerequisite: COI
Credit: 3 units; (3 hours/week: lec)

Rationale: This course teaches the students how to maintain and preserve the physical assets of a manufacturing firm to ensure that the machines are capable of doing what the users want it to do and when they want it done, using the three main measures of manufacturing efficiency: time, speed, quality.

3. **IEng 168 - Optimized Production Technology**

Description: Computer-based management system for production planning and scheduling.

Prerequisite: COI
Credit: 3 units; (3 hours/week: lec)

Rationale: The course equips the students with an understanding of management efficiency through with the maximization of production efficiencies through balanced flow, minimization and/or elimination of bottlenecks and scheduling of optimum production lot sizes.

VII. PROJECTED SOURCE OF RESOURCES

A. FACULTY

Name of Faculty	Field of Specialization	Subject Taught (At Present)	Courses to be Taught
Fe D. Cagang	Biology minor in Statistics	Statistics related subjects Ethics	Stat 21, IEng 124, IEng 153 Ethc 21
Ma. Cecilia Tarroza	Psychology	Psychology related subjects	Psyc 11, IEng 151
Jubelmar Buba	Automotive	Machine Shop hands-on subject	IEng 148
Michelle Igot	Agribusiness and Management	Agribusiness, management, economics related subjects	ESci 134
Instructor E (to be hired)	Mechanical engineering	Mechanical Engineering course	ESci 136
Instructor F (Part-time)	Metallurgical engineering	Metallurgical Engineering course	ESci 143
Armand Ellorimo	Industrial Education	Engineering drawing related subjects	ESci 121, ESci 131
Esperanza Sumalinog	English	English subjects	Engl 11, Engl 12, Spch 11, Engl 21, Engl 24
Amelia Deso-asido	Home Technology	Humanities subject	Humn 11
Dr. Alberto Carillas	Ag. Education	Philosophy subject	Phil 12
Editha Sidra	English	English subjects	Engl 11, Engl 12, Engl 21, Engl 24, Spch 11
Pacifico Cosiñero	Education major in Social Science	Social Science subjects	ScSc 11, ScSc 13, ScSc 14, ScSc 15, ScSc 16
Rosita Merino	Education major in Pilipino	Filipino subjects	Fili 11, Fili 12
Cristina Buba	Physical Education	Physical Education courses	PhEd 11, PhEd12, PhEd 13, PhEd 14
Pedro Vallar	Ag. Education	NSTP courses	NSTP 11, NSTP 12
Ralin C. Alberca	Biology and Environmental Science	Biology and Env. Sci subjects	Biol 11, EnSc 21
Queen Ever Atupan	General Accounting	Accounting related subjects	Acct 21, ESci 145
Carocel Galler	Information Technology	Computer related subjects	CSci 21, CSci 103
Jovelino A. Amores	Computer Engineering	Computer related subjects	CSci 21, CSci 103
Gina Ellorimo	Mathematics	Mathematics related subjects	Math 13, Math 112

Engr. Randy Cempron	Agricultural Engineering	Mathematics related subjects	Math 113, Math114,
Engr. Dara Lynn P. Rivera (to be hired as Part Time Instructor)	Industrial Engineering		IEng 148, IEng 157, IEng 161, IEng 162, IEng 200a or IEng 200 IEng 156, IEng 159
Engr. Margarito N. Tongco, Jr. (To be hired as Part-time Instructor)	Industrial Engineering		ESci 144, IEng 149 IEng 152, IEng 154 IEng 155, IEng 158 IEng 164, IEng 166, IEng 168
Engr. Emerson Lemuel G. Go (To be Hired as Part-time Instructor)	Industrial Engineering		ESci 126; Physics 11, Physics 21
Engr. Glen D. Ceballos (To be hired as Part-Time Instructor)	Electronics and Communications Engineering		ESci 116, ESci 133, ESci 142, ESci 146
Engr. Reynaflor Licardo (Existing Part-Time Instructor)	Chemical Engineering	Chemistry subjects	Chem 11

B. TEXTS AND READINGS

Line No.	Author	Title	Edition / Publisher / Copyright
1	Hines, W. & Montgomery, D.	Probability and Statistics in Engineering And Management Science	
2	Walpole, R. & Meyers	Probability and Statistics in Engineers & Scientists	5th Ed. / Macmillan Publishing Co.
3	DeGarmo, Sullivan, Bontadelli, J. A.	Engineering Economy	9th Ed. / Macmillan Publishing Co. / 1993
4	Thuesen, Fabrycky	Engineering Economy	Prentice hall, Inc.
5	Riggs, JL., Bethel, LL. Van Horn.	Industrial Organization and Engineering Management: Organization and Management	6th Ed. / Mc Graw Hill
6	Martinez, E., Abasolo, Carlos, C.	Management Theory and Practice	2nd Ed. / Edt.G.I.C. Enterprise / 1983
7	Clark, Donald Sherman	Engineering materials and Processes	Int. Textbook Co.
8	Degarmo, E.P.	Materials & Processes in Manufacturing	4th Ed.
9	Kalkapjan, A.	Manufacturing Processes for Engineering Materials	2nd Ed. / 1991
10	Niebel, Draper & Wysk	Modern Manufacturing Process Engineering	
11	Kanawaty George	Introduction to work study	4th Ed. / ILO / 1992
12	Meyers, F.	Motion and Time Study	Prentice Hall, Inc. / Englewood / 1992
13	Barnes, R.	Motion and Time Study, Design & Measurement of Work	Joihn wiley and Sons
14	Lazzaro, Victor	Systems and Procedures	
15	Niebel, Bejamen W.	Motion and Time Study	9th Ed. / Richard D. Irwin Inc. / 1993
16	Montgomeyr, D.	Design and Analysis of Experiments	
17	Taha, Hamdy	Operations Research: An Introduction	5th Ed. / Maxwell McMillan Pub. Co. /1992
18	Hillier, F. S & Lieberman	Introduction to Operations Research	6th Ed. / McGraw Hill Book Company
19	Winston, Wayne	Operations Research: Applications And Algorithms	3rd Ed. / Wadsworth Pub. Co. / 1994
20	Levin and Rubin	Quantitative Approaches to Management	
21	Besterfield, D.H	Quality Control	Prentice Hall
22	Kehoe, Dennis F.	Fundamentals of Quality Management	Chapman & Hall / 1996
23	Feigenbaum	Total Quality Control	
24	Behrens, W and Hawranek, P. M.	Manual for the Preparation of Industrial Feasibility Studies	UNIDO / 1991

25	Fyffe, David	Project Feasibility Analysis	Georgia Inst. Of Tech.
26	McCormick E.J. & Sanders, M.S	Human Factors in Engineering & Design	McGraw Hill Book Company / 1995
27	Chaffin & Anderson	Occupational Biomechanics	John Wiley and Sons / 1991
28	Kroemer, K.H.E., Kroe3mer, H.B., Kroemer-Elbert K.E	Ergomics: How to Design for Ease And Efficiency	Prentice Hall / 1994
29	Proctor, rw. & Van Zandt, T.	Human Factors in Simple and Complex Systems	Allyn and Bacon / 1994

B. COLLEGE FACILITIES

1. Standard lecture room with chalkboard; and facilities for audio-visual presentations
2. Shop Facilities
   a) Plane Iron
   b) Sensor Selector
   c) Digital Barometer
   d) Radiometer / Photometer
   e) Sound level meter
   f) Video Camera
   g) Bins, fixtures and jigs for bolt and washer
   h) Assembly
   i) Pin board and pins
   j) Power hacksaw, 1 hp
   k) Shaper / Miller machine, 2 hp vertical and horizontal
   l) Band saw, ½ hp
   m) Bar cutter
   n) Bending machine
   o) Disk sander, 10" dia., ½ hp
   p) Drill press, bench, ½ hp
   q) Electric Soldering Machine
   r) Folding Machine
   s) Gas welding machine, oxyacetylene standard torch set
   t) Jig saw, 1/3 hp
   u) Rolling machine
   v) Squaring Machine
   w) Molding Machine
   x) Oven
   y) Hand Drill, manual (portable and breast)

z) Threading taps (tap and die)

aa) Vise, machinist

bb) Anvil

cc) Forge Machine

dd) Hot metal tongs

ee) Sledge hammer

ff) Central gauges

gg) Combination Square

hh) Depth gauge

ii) Level, carpenter

gg) Protractor (combination)

kk) Screw thread gauge

ll) Steel rule

mm) Steel Square

nn) Surface plate

APPENDICES

TABLE 1. Distribution of Industrial Engineers Employed Within the Province of Leyte, 2003.

Name of Companies	Address	Number of IE's Employed						
		Isabel	Palompon	Ormoc	Tacloban	Cebu	Others	TOTAL
Philippine Associated Smelting and Refining Corp. (PASAR)	LIDE Isabel, Leyte	1	1			2	1	5
Philippine Phosphate Fertilizers Corp. (PHILPHOS)	LIDE Isabel, Leyte	1	1	1		2	5	10
LIDE Management Corp. (LMC)	LIDE Isabel, Leyte	1						1
Local Government Unit - Isabel (LGU-Isabel)	Isabel, Leyte					1		1
California Energy Int'l Ltd. (Cal-En)	Milagro, Ormoc City, Leyte			1		1		2
PEPSI Cola Manufacturing Inc.	Sto. Niño, Tanuan, Leyte				1			1
Coca-Cola Bottlers Inc.	Fatima Village, Tacloban City				1		1	2
Visayan Oil Mills	Hilapnitan, Baybay, Leyte							0
Total		**3**	**2**	**2**	**2**	**6**	**7**	**22**

TABLE 2. Distribution of Industrial Engineers In Various Working Positions Currently Employed in the Different Companies Within the Province of Leyte, 2003.

Name of Companies	Address	Current Employment of IE's						
		Managerial	Supervisory	Analyst	Programmer	Rank & File	Others	TOTAL
Philippine Associated Smelting and Refining Corp. (PASAR)	LIDE Isabel, Leyte		3	2				5
Philippine Phosphate Fertilizers Corp. (PHILPHOS)	LIDE Isabel, Leyte	3	3	2	2			10
LIDE Management Corp. (LMC)	LIDE Isabel, Leyte		1					1
Local Government Unit - Isabel (LGU-Isabel)	Isabel, Leyte							1
California Energy Int'l Ltd. (Cal-En)	Milagro, Ormoc City, Leyte	1	1					2
PEPSI Cola Manufacturing Inc.	Sto. Niño, Tanuan, Leyte			1				1
Coca-Cola Bottlers Ic.	Fatima Village, Tacloban City				2			2
Visayan Oil Mills	Hilapnitan, Baybay, Leyte							0
TOTAL		4	8	5	4		1	22

TABLE 3. Employment Projection for Industrial Engineers within the Province of Leyte in the Next Five (5) Years, 2003-2008.

Name of Companies	Address	Projected additional Employment for IE's in the Next Five (5) Years							% INCREASE
		Managerial	Supervisory	Analyst	Programmer	Rank & File	Others	TOTAL	
Philippine Associated Smelting and Refining Corp. (PASAR)	LIDE Isabel, Leyte	5						5	100.00%
Philippine Phosphate Fertilizers Corp. (PHILPHOS)	LIDE Isabel, Leyte		2	5	3			10	100.00%
LIDE Management Corp. (LMC)	LIDE Isabel, Leyte	1						1	100.00%
Local Government Unit-Isabel (LGU-Isabel)	Isabel, Leyte	1	4					5	500.00%
California Energy Int'l Ltd. (Cal-En)	Milagro, Ormoc City, Leyte	5	5					10	500.00%
PEPSI Cola Manufacturing Inc.	Sto. Niño, Tanuan, Leyte		3	2				5	500.00%
Coca-Cola Bottlers Inc.	Fatima Village Tacloban Ctiy		5					10	500.00%
Visayan Oil Mills	Hilapnitan Baybay, Leyte	1	1					2	
TOTAL		13	20	7	3	5		48	218.18%

TABLE 4. Distribution of Senior Students from Merida and Isabel, Leyte With Their Most Preferred Engineering Course, SY 2003-2004.

Engineering Course	MERIDA		ISABEL		TOTAL	
	No.	%.	No.	%	No.	%
BS Comp E	20	20.62%	114	37.01%	134	33.09%
BSIE	31	31.96%	54	17.53%	85	20.99%
BSCE	12	12.37%	34	11.04%	46	11.36%
BSEE	7	7.22%	27	8.77%	34	8.40%
BSME	11	11.34%	18	5.84%	29	7.16%
BSECE	9	9.28%	14	4.55%	23	5.68%
BS Ag. Eng.	4	4.12%	9	2.92%	13	3.21%
OTHERS	3	3.09%	38	12.34%	41	10.12%
TOTAL	97	100%	308	100%	405	100%

LSU-IC VISION, MISSION, OVERALL GOALS AND GENERAL OBJECTIVES

VISION

LSU-IC, as center of excellence in agri-industrial technology, education and research in Northern Leyte and in the Eastern Visayas region.

MISSION

Attainment of the highest quality of human capital and scientific knowledge for the sustained growth and development of information technology, engineering, agri-industries, education and other related fields.

OVERALL GOALS

1. Produce quality manpower and graduates in information technology, engineering, computer science, elementary and secondary education and agri-industrial related fields to serve the development needs of the region.

2. Accelerate the economic upliftment of the people in the region through relevant research , development and extension programs.

3. Enhance regional development for global competitiveness.

GENERAL OBJECTIVES

1. Provide excellent education and manpower training in engineering, computer technology education, agri-business and other related fields for regional and rural development.

2. Be attuned with the recent trends in instruction, research, development and extension to better address problems and concerns as well as uncover opportunities in agri-industries.

3. Generate appropriate knowledge and technologies for industrial engineering, information technology and agri-industries.

4. Promote transfer of engineering and agri-industries technology for sustainable development.

5. Enhance public awareness and advocacy on relevant issues affecting quality and safety in engineering and agri-industries.

6. Establish linkages and cooperation with local, national and international institutions and organizations involved in the pursuit of engineering and agri-industries development.

7. Create development-oriented individuals and income generating projects as models of instruction and income generation.

8. Strengthen the physical and manpower capability of the College for efficient and effective instruction, research, extension and production.

SCHEDULE OF ACTIVITIES
93rd VSU FOUNDING ANNIVERSARY
Jul 29-Aug 11, 2017

Theme: **Green RDE: Keeping nature and technology in harmony**

Date	Time	Event/Activity	Venue	Focal Persons
Jul 29-30 (Sat-Sun)	7:30 AM	8th Visayas-wide Ultimate Frisbee Tournament	Upper Oval Grounds	Frisbee Club and IHK
		ViLTEC Members Tennis Tournament	Tennis Court	ViLTEC
July 31-Aug 7	5:30PM	VSU OBC Cup 2017	Upper Basketball Court	OBCapuno
July 31	7:00 PM	Welcome Night for all Students	Upper Oval	USSO and VSUSHS
Aug 1 (Tue)	9:00AM	Formal Opening of Flower and Garden Show Guest: USEC Evelyn Laviña	Upper Oval Grounds	DoH and ViHOS
	1:00PM	Blessing of Beach Kiosks, DBS Faculty Room, DFST Extension, CVM Faculty Room		Engr. Mario Valenzona
	5:00PM	Opening of Art Exhibit	2/F Balay Alumni	
Aug 3 (Thu)	7:30PM	High School Night	Gym	VSUSHS and VLHS
Aug 4 (Fri)	6:00 PM	Friday Night Live	Upper Oval	USSC
	6:30 PM	Welcome and Cultural Night - AAACU	CCE	
Aug 5 (Sat)	5:00 AM	Fun Run/Walk for A Cause	Upper Oval	ACRO and IHK
	7:00 AM	Congressional Cup	Tennis Court	
	7:00 PM	Mayor's and Congressman's Night (c/o Baybay Tourism & Investment Office)	Upper Oval	
Aug 5-6 (Sat-Sun)	7:00AM	Age-group Swimming Competition	Olympic-size swimming pool	IHK
Aug 6 (Sun)	7:00 AM	Armenia's Invitational Tennis Tournament	Tennis Court	IHK
Aug 7(Mon)	3:00 PM	Anniversary Mass	Gym	CDV Godoy
	4:00 PM	Formal Opening of Booths	Welcome Arc	OVPRE
	7:00 PM	Concert with BoyBandPH	Gym	Derek & Jed
Aug 8 (Tue)	8:00AM	Opening of Jackfruit FIESTA	Upper Oval	OVPRE
	9:00AM	Kaugmaran Festival	Upper Oval	OVPRE
	11:00AM	Blessing of the Jackfruit	Candadam,	

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