





Course Name/Course Code: **Enterprise Application (APLIENT)**  
Credits and Contact Hours: 1 unit (1-hour lecture)  
Instructor: Ronaldo Polancos

**Textbook and Online Resources:**

Wagner, Bret; Monk, Elleen (2013), Concepts in Enterprise Resource Planning (4<sup>th</sup> Edition).  
Cengage Learning Asia  
Summer, Mary (2013), Enterprise Resource Planning. Pearson: New International Edition  
Van Weele, Arjan J. (2014), Purchasing and Supply Chain Management (6<sup>th</sup> edition).  
Cengage Learning Asia  
Kachinske, Edward; Kachinske, Adam; Kachinske, Timothy (2012), Maximizing your sales  
with Microsoft Dynamics CRM 2011 (1<sup>st</sup> edition). Cengage Learning Asia  
Satzinger, J. W., Jackson, R. B., Burd, Stephen D. (2014), Introduction to Systems Analysis  
and Design (6<sup>th</sup> e

Course Name/Course Code: **Business Process Outsourcing (BUSSPRO)**  
Credits and Contact Hours: 2 units (2-hour lecture)  
Instructor: Dr. Alma Ma. Jennifer Gutierrez

**Textbook and Online Resources:**

- Cleveland, B., and J. Mayben. 1999. Callcenter Management on Fast Forward. Maryland: Call Center Press.
- Fitzsimmons, J., Fitzsimmons, M., Bordoloi, S. (2014) Service Management: Operations Strategy and Information Technology, 8<sup>th</sup> Edition. Singapore. McGraw-Hill/Irwin
- Metters, R. , K. King-Metters, M. Pullman, and S. Walton. 2005. Successful Service Operations Management. 2nd ed. Ohio: Thompson-Southwestern Publishing.
- Kotlarsky, J. 2011. New Studies in Global IT and Business Service Outsourcing: 5<sup>th</sup> Global Sourcing Workshop 2011, Courchevel, France.
- Evenson, R. (2012) Customer Service Management Training 101: Quick and Easy Techniques That Get Great Results. New York: Amacom
- Cooper, W. (2011) Handbook on Data Envelopment Analysis. Boston, MA: Springer U.S.
- Macintyre, M. (2011) Service Design and Delivery. Boston, MA: Springer U.S.

**Course Information:**

- a. Description - This course focuses on managing a call center and its related problem such as manpower scheduling, forecasting and planning of resources. Students will analyze the call center industry of the Philippines and identify IE tools that may be used in managing the call center.
- b. Prerequisites/Co-requisites: SERVENG (Soft Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. The student will be able to encourage and help students to practice critical thinking in analyzing cases given and discussed in class.
  2. The student will be able to instill the value of logical and systematic thinking in analyzing the operations and identifying the problems of a service system.
  3. The student will be able recognize the complexities of the call center industry.
  4. The student will be able to familiarize with the problems encountered in the industry.
  5. The student will be able to solve the issues in the call center area using the appropriate IE tools.
  6. The student will be able to understand the complex issues of call center scheduling.
- b. Student outcomes  
SO-H. An understanding of the effects of engineering solutions in a comprehensive text  
SO-I.

**Brief List of Topics to be Covered:**

- Introduction to Call Center Management
- Call center functions and metrics
- Forecasting call center load
- Planning Resource Requirements
- Call center staffing tradeoffs
- Scheduling call center staff
- Managing Daily Schedules and Service
- Ergonomics Issues in Call Center Management
- Call Center Technologies



b. Student outcomes

SO-E. An ability to recognize, formulate, and solve engineering problems

SO-C. An ability to design, build, improve, and install systems or processes which are efficient, effective, as well as robust to meet desired needs within identified constraints.

SO-F. A recognition of professional, social, and ethical responsibility

**Brief List of Topics to be Covered:**

- Fundamental of Systems
- Kepner Tregoe (KT) Situation Appraisal
- Problem Analysis Techniques
  - KT Problem Analysis Technique
  - Affinity/ Relationship Diagram
  - Cause and Effect Analysis
  - Stream Diagnosis

Course Name/Course Code:





Course Name/Course Code: **Engineering Economy (for non IE's) (ECONENG)**  
Credits and Contact Hours: 3 units (3-hour lecture)  
Instructor: Ms. Jazmin Tangsoc

**Textbook and Online Resources:**

Sullivan, W. (2014). Engineering Economy, 16<sup>th</sup> Edition. New Jersey: Prentice Hall.  
Blank, L., Tarquin A. (2012). Engineering Economy, 7th Edition. New York: McGraw Hill  
Science/Engineering/Math.  
Edmonds, T. (2013). Fundamental Financial Accounting Concepts. New York: McGraw-  
Hill/Irwin.  
Hartman, J.



Course Name/Course Code: **Introduction to Economic Analysis (ECONOMY)**  
Credits and Contact Hours: 3 units (3 hours lecture)  
Instructor: Eric Siy

**Textbook and Online Resources:**

Samuelson, P. and Nordhaus W. (Latest edition) ECONOMICS. McGraw-Hill/ Irwin  
Mankiw, G. (Latest edition) Principles of Economics. Cengage Learning.  
Case, K.E. and Fair, R.C. (Latest edition) Principles of Economics. Pearson/ Prentice-Hall.  
Frank, R.H. and Bernanke, B.S. (Latest edition) Principles of Microeconomics. McGraw Hill/ Irwin.

Economics textbook made available online by a former CalTech Professor is available in <http://www.mcafee.cc/Introecon/IEA.pdf>

Managerial Economics introduction was made available by a NUS professor in [http://www.comp.nus.edu.sg/~ipng/mecon/sg/01int\\_sg.pdf](http://www.comp.nus.edu.sg/~ipng/mecon/sg/01int_sg.pdf)

An online reference for an optimization technique can be found in <http://www.authorstream.com/Presentation/brensons-1436507-intro-to-linear-programming/>. Note: needs you to log-in using a Facebook account.

Graphtest: an online solver for linear programs can be found in <http://riot.ieor.berkeley.edu/Applications/SimplexDemo/Simplex.html/>

**Course Information:**

- a. Description - As an introductory economics course for Industrial Engineering majors, the generally accepted topics on economics will be covered. The first part of the course covers basic microeconomic concepts such as opportunity cost, comparative advantage, supply and demand of consumer goods and consumer behavior. The second part of the course discuss producer output as an Industrial Engineering concern. Concepts like productivity and efficiency are introduced and applied to production costs and output planning for a firm. The last part introduces macroeconomics, including a model of the economy, and the standard Aggregate Demand-Aggregate Supply model. Topics on this last part include Fiscal policy, banking, and the role of the Central Bank and government in Economic planning.
- b. Prerequisites/Co-requisites: DIFFCAL (Soft Pre-requisite)
- c. te)



Course Name/Course Code: **Physical Ergonomics (ERGBIO1)**  
Credits and Contact Hours: 1 unit (1-







- b. Student outcomes  
SO-E. An ability to recognize, formulate, and solve engineering problems

**Brief List of Topics to be Covered:**

- Definition of cognitive ergonomics
- Model of Human Information Processing
- Signal detection theory
- Vigilance
- Information Theory
- Attention in Perception and Display Space
- Usability Theories
- Usability Testing
- Memory and learning
- Mental workload



- Design of Computer Systems
  - Graphical Interface design
  - Windows,
  - Direct manipulation
  - Screen layout,
  - Use of Colors and color coding
  - Navigation techniques
  - Consistency in design
  - Design of menus and command words
  - Input devices
  - Auditory interfaces
  - Design of hypermedia and multimedia
  - Intelligent interfaces design
  - Design of decision support system
- Internet and web page design
  - PDA's and hand-held telephone
- Evaluation Of HCI
  - Usability Assessment
  - Usability Engineering
  - Scenario-based design
  - Contextual Design and Contextual Enquiry
  - Ethnographic methods
  - Task analysis, Cognitive Walkthrough
  - Use of Prototypes
  - Evaluation top-down,  
bottom-up and middle-out.
- CAMTASIA Software

Course Name/Course Code: **Interaction Design and Methods (ERG2LEC)**  
Credits and Contact Hours: 3 units (3-hour lecture)  
Instructor: Jazmin Tangsoc

**Textbook and Online Resources:**

- Shneiderman B., Plaisant, C., Cohen M. and Jacobs, S. (2013). Designing the User Interface: Pearson New International Edition: Strategies for Effective Human-Computer Interaction.
- Anderson, Stephen P. (2011). Seductive Interaction Design: Creating Playful, Fun, and Effective User Experiences.
- Preece, J., Rogers, Y. and Sharp, H. (2015). Interaction Design: Beyond Human-Computer Interaction, 4<sup>th</sup> edition.
- Bedny, G. Z. and Karwowski, W. (2011). Human-Computer Interaction and Operators' Performance : Optimizing Work Design with Activity Theory.
- Bennett, K. and Flach, J. (2011). Display and Interface Design: Subtle Science, Exact art

- Methods for Observation and Data Collection
  - Design of Surveys and Questionnaires
  - Interview Techniques
- Analytical Techniques
  - Task Analysis
- Methodologies for Rating and User Testing Task Performance Measures
  - Measurement of Affect
- Measurement of Workload and Stress

Course Name/Course Code: **Human Factors Applications in the Industry  
(ERG3LEC)**  
Credits and Contact Hours: 3 units (3-hour lecture)  
Instructor: Jazmin Tangsoc

**Textbook and Online Resources:**

Hammer and Price (2000), Occupational Safety Management and Engineering, Prentice Hall.  
Jordan, P. (2000).

- Human Factors and Safety
- Safety Management and Safety Liability and Legislation
- Ergonomics in product design of consumer products
- Ergonomics in software development
- Human Factor in Service industry





b. Student outcomes

SO-A - An ability to apply knowledge of mathematics, physical and information sciences, and engineering sciences to the practice of industrial engineering.

SO-E - An ability to recognize, formulate, and solve engineering problems.

**Brief List of Topics to be Covered:**

- Classification of Facility Layout and Locating a Problem
- Overview of the Plant Layout Problem

Course Name/Course Code: **Introduction to Banking Industry (FINASER)**  
Credits and Contact Hours: 2 units (2-hour lecture)  
Instructor: Jazmin Tangsoc

**Textbook and Online Resources:**

Miranda, Gregorio S. (1995). Commercial Banking. Laguna: L & G Business House.  
Workers Desk, IBON Databank and Research Center, IBON Foundation, Inc. (2003). The  
Philippine Banking Sector. Sta. Mesa, Manila, Philippines: IBON Books

- Classification of Banks
- General Functions of Banks
- Bank Supply Chain (Flow of Cash and Information)

#### Philippine Commercial Banking System

- Philippine Banking System
- Nature of Commercial Banking
- Functions/Services in Commercial Banking
- Bank Investment, Asset Management, Bank Marketing

#### Branch Banking and Bangko Sentral ng Pilipinas (BSP)

- Unit Banking vs. Branch Banking
- General Steps in Branch Establishment
- Structure and Relationship of Head Office to the Branches
- Typical Branch Services
- ATM operations/Electronic Banking
- Role(s) of Bangko Sentral ng Pilipinas

#### Bank Failures

- Management of Risks in Banking
- Definition of Bank Failures
- Quantifying the Causes of Bank Failures

#### Competitive Issues in Banking

- Measuring Bank Output
- Productivity Measures
- Empirical Models of Competition in Banking

#### Strategic Issues in Banking

- Trends and challenges in banking: Philippine setting
- Technology of banking: delivery, information management, data capture

Course Name/Course Code: **Cleaner Production (GREENPR)**  
Credits and Contact Hours: 2 units (2-

**Course Information:**

- a. Description - This course begins with an examination of the industry sector's contributions as well as impacts to its economic and ecological environments. The role of cleaner production (CP) in sustainable development is identified at operations level, factory level, and eco-system level. Cleaner production tools that are useful in the lifecycle perspective, eco-

Course Name/Course Code:     **Introduction to Health Care Management  
(HEALCAR)**  
Credits and Contact Hours:     2 units (2-hour lecture)  
Instructor:                     Ms.Jazmin Tangsoc

**Textbook and Online Resources:**

- Bendavid, Y., & Boeck, H. (2011). Using RFID to improve hospital supply chain management for high value and consignment items. *Procedia Computer Science*, 5, 849 – 856.
- Hill, J. W., & Powell, P. (2009). The national healthcare crisis: Is eHealth a key solution? *Business Horizons*, 52, 265 – 277.
- Inmon, W. (2008). Data warehousing in the healthcare environment. *Inmon Data Systems*, 3-7.
- Karongo, C. (2009). Hospital Struggle With Solution to Unpaid Bills. Retrieved from Capital News: <http://www.capitalfm.co.ke/news/Kenyanews/Hospitals-struggle-with-solution-to-unpaid-bills-11908.html>
- Oracle (2011). Oracle Enterprise Healthcare Analytics includes advanced data

controlling of health care costs, etc. Likewise, this course will also discuss trends and challenges in the industry

- b. Prerequisites/Co-requisites: SERVENG (Soft Pre-requisite)
- c. Required course

### **Specific Goals for the Course:**

- a. Specific outcomes
  1. The student will be able to prepare and present an oral report on cases and justify recommended solutions.
  2. The student will be able to make a critical analysis on a service management health care article.
- b. Student outcomes
  - SO-D. An ability to work effectively in multi-disciplinary and multi-cultural teams.
  - SO-I. An ability to engage in life-long learning and an understanding of the need to

Course Name/Course Code: **Human Behavior (HUBEHOR)**  
Credits and Contact Hours: 3 units (3-Hour Lecture)  
Instructor: Anna Bella Siriban Manalang

**Textbook and Online Resources:**

Robbins, Stephen P., Organizational Behavior, 8<sup>th</sup> edition, Prentice Hall  
Davis, Keith & John Newstrom, Human Behavior at Work, McGraw Hill  
George, Stephen & Arnold Weimerskirch, Total Quality Management, The Portable MBA Series, John Wiley and Sons, Inc.  
Personality Theories (2012) retrieved from  
<http://webpace.ship.edu/cgboer/perscontents.html>  
Leadership Theories (2011) retrieved from  
[http://changingminds.org/disciplines/leadership/theories/leadership\\_theories.htm](http://changingminds.org/disciplines/leadership/theories/leadership_theories.htm)  
Belbin Teams (2011) retrieved from <http://www.belbin.com/rte.asp?id=8>  
Total Quality (2011) retrieved from <http://managementhelp.org/quality/total-quality-management.htm>  
Baldrige Award (2011) retrieved from <http://asq.org/learn-about-quality/malcolm-baldrige-award/overview/overview.html>

**Course Information:**

- a. Description - This is an introductory course in human behavior in organization. Lectures include topics on human personality, work teams, organization types, and leadership functions in organizations.
- b. Prerequisites/Co-requisites: None
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. The student will have the ability to evaluate and make recommendations on problems and concerns of organizations in managing their operations and



- Functional Management Skills
- Leading Managerial Function
- Controlling Managerial Function
- Total Quality Management: Overview
- Major Programs of TQM

Course Name/Course Code: **Cost Accounting (IECOSAC)**  
Credits and Contact Hours: 2 units (1 hour lecture, 3 hours laboratory)  
Instructor: Dr. Willy Zalatar/ Ms Jazmin C. Tangsoc

6. The student will be able to apply cost accounting principles in choosing the lowest cost in different decision making process.(activity based costing, joint cost allocation, job order costing)
- b. Student outcomes
- SO-H. An understanding of the effects of engineering solutions in a comprehensive context.

**Brief List of Topics to be Covered:**

- Review of Financial Accounting
- Introduction to Cost Terms and Purposes
- Definition and Classification of Cost
- Cost-Volume-Profit Relationships
- Relevance, Pricing, and the Decision Process
- Process Costing
- Cost Allocation: Joint and By-Products
- Job-Order Costing
- Standard Costing and Analysis of Variance
- Activity-Based Costing



SO-H. An understanding of the effects of engineering solutions in a comprehensive context.

**Brief List of Topics to be Covered:**

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Course Name/Course Code: **Fundamentals of Financial Management for IEs (IEFINMT)**  
Credits and Contact Hours: 2 units (1-hour lecture & 3-hour laboratory)  
Instructor: Bryan Gobaco

**Textbook and Online Resources:**

Brigham E., Houston J. F. (2013) Fundamentals of Financial Management. 13th Edition. South-Western: Thomson.  
Higgins R. (2011) Analysis for Financial Management. 9<sup>th</sup> Ed. Boston: McGraw-Hill.  
Black S. B., Hirt G. A. (2012) Foundations of Financial Management. 14<sup>th</sup> Ed. Boston: McGraw Hill/Irwin  
McGuigan J. R., Moyer, R. C., Rao, R. P., Kretlow W. J. (2012) Contemporary Corporate Finance. 12<sup>th</sup> Ed. International Ed., Cengage Learning.  
Brigham E., Houston J. F., Jun-Ming H., Kee K. Y., Banny-Ariffin A.N. (2014) Essentials of Financial Management. Cengage Learning.  
Titman, S.; Keown A.J.; Martin J.D. (2011) Financial Management: Principles and Applications. 11<sup>th</sup> Ed., Prentice Hall  
All About Financial Management in Business  
<http://managementhelp.org/businessfinance/index.htm>  
Financial Management at MIT <http://ocw.mit.edu/courses/sloan-school-of-management/15-414-financial-management-summer-2003/>

**Course Information:**

- a. Description - This course is involved with the discussion of financial analysis and planning, the financial environment, management of security investment portfolios, computation of cost of capital, capital structure of a firm, principles of leverage, corporate dividend policy, management of working capital and short-term financing. It will also be a channel to familiarize students with the Philippine Stock Market (PSE).
- b. Prerequisites/Co-requisites: IMEECON (Hard Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  - 1. The student will be able to have a clear understanding of the fundamental principles of finance and the structure of financial markets.
  - 2. The student will be able to know how to do cash flow analysis and pro-forma statements for a corporate organization.
  - 3. The student will have the ability to interpret financial statements appropriately and assess a company's financial standing by use of financial ratios.
  - 4. The student will be able to recognize that there are different sources of capital for a firm with each source having its own pros and cons and each has its cost and required return.

5. The student will be able to realize that current assets have to be well managed and in so doing can help a firm in becoming profitable.
6. The student will be able to understand that a company's assets are funded and short term financing can be a viable means of funding.
7. The student will become aware that there are a lot of financial investment instruments that can be good opportunities for building wealth if one only understands the return and risks involved as well as the mechanics of investing in it.

b. Student outcomes

SO-J. An ability to use the techniques, skills, and engineering tools necessary for engineering and business practice.

**Brief List of Topics to be Covered:**

- Introduction to Financial Management
- Financial Analysis, Forecasting, Planning and the Financial Environment
- Security Investment and Cost of Capital
- Capital Structure and Dividend Policy
- Management of Current Assets
- Short-term Financing/Financing Current Assets
- Special Topics in Financial Management (Research/Seminar)

Course Name/Course Code: **Financial Accounting for Industrial Engineering Majors (IEMANAC)**  
Credits and Contact Hours: 2 units (1 hour lecture and 3 hours computational laboratory)  
Instructor: Dr. Willy F. Zalatar

**Textbook and Online Resources:**

- Anthony, Robert N., Reece, James S., and Hertenstein, Julie H. (1995). *Accounting: Text and Cases* (9<sup>th</sup> edition). Chicago: Irwin.
- Anthony, Robert N., Hawkins, David H., and Merchant, Kenneth A. (2004). *Accounting: Text and Cases*. Boston: Irwin/McGraw-Hill.
- Edmonds, Thomas P. (2013). *Fundamental Financial Accounting Concepts*. New York: McGraw-Hill/Irwin.
- Norton, Curtis L. and Porter, Gary A. (2013). *Introduction to Financial Accounting*. Australia: South-Western, Cengage Learning.
- Reimers, Jane L. (2011). *Financial Accounting: A Business Process Approach*. Boston: Pearson.
- Scott, William Robert (2012). *Financial Accounting Theory*. Toronto: Pearson Canada.
- Warren, Carl S., Reeve, James M., and Duchac, Jonathan E. (2014). *Financial Accounting*. Australia: South-Western, Cengage Learning.
- Financial Accounting. (1999)





Course Name/Course Code: **Industrial Engineering Economy (IEMECON)**  
Credits and Contact Hours: 3 units (3-hour Lecture)  
Instructor: Richard Li

**Textbook and Online Resources:**

- Sullivan, W. (2014). *Engineering Economy*, 16<sup>th</sup> Edition. New Jersey: Prentice Hall.
- Blank, L., Tarquin A. (2012). *Engineering Economy*, 7<sup>th</sup> Edition. New York: McGraw Hill Science/Engineering/Math.
- Hartman, J. (2006). *Engineering Economy and the Decision-Making Process*. New Jersey: Prentice Hall.
- Sison, E. (2009). *Engineering Economic Analysis*, International 10<sup>th</sup> Edition. New York: Oxford University Press.
- Edmonds, T. (2013). *Fundamental Financial Accounting Concepts*. New York: McGraw-Hill/Irwin.
- Norton, C. and Porter, G. (2013). *Introduction to Financial Accounting*. Australia: South-Western, Cengage Learning.
- Reimers, J. (2011). *Financial Accounting: A Business Process Approach*. Boston: Pearson.

**Course Information:**

b. Student outcomes

SO-H. An understanding of the effects of engineering solutions in a comprehensive context

**Brief List of Topics to be Covered:**

- What is Engineering Economy?
- Present Economy Studies
- Interest and Money Time Relationships
- Review on Depreciation
- Applications of Money-Time Relationships
- Minimum Attractive Rate of Return (MARR)
- Basic Methods for Making Economy Studies
- Discounted Capital Recovery
- Comparing Alternatives (Before Tax Analysis)
- Evaluation of Alternatives (After Tax Analysis)

Course Name/Course Code: **NETWOK PRINCIPLES (IEPRNET)**  
Credits and Contact Hours: 2 units (2-hour lecture)  
Instructor: Ronaldo Polancos

**Textbook and Online Resources:**

Olenewa, J. (2014), Guide to Wireless Communications (3<sup>rd</sup> edition). Cengage Learning Asia  
Kurose, J and Ross, W. (2013), Computer Networking: A Top-down Approach (6th edition). PearsonI International  
Dean, T. (2013) Network + Guide to Networks, International Edition (6<sup>th</sup> edition). Cengage Learning Asia  
Boyle, R., Clements, J. (2013), Applied Networking Labs (2<sup>nd</sup> edition). Pearson International  
Stallings, W. (2013), Wireless Communications & Networks. Pearson International

**Course Information:**

- a. Description - This PRINNET course covers the basic concepts of computer networking. It shall include the ISO-OSI reference model, networking addressing, local and wide area networking technologies. The students shall be able to experience how to configure a LAN and WAN topology.
- b. Prerequisites/Co-requisites: SYSINDE(Soft Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  - 1. The student will have the ability to develop and design a network infrastructure plan that will integrate critical component of the IT fabric in an enterprise - data, applications, servers, operating system, security and data centers.
- b. Student outcomes  
SO-

Course Name/Course Code: **Environmental Engineering for IEs (IMEENVI)**  
Credits and Contact Hours: 2 units (lecture)  
Instructor:

3. The student will be able to know the national laws and policies on resource management and pollution abatement.
  4. The student will be able to apply integrated, preventative and systemic management of resources and pollution prevention.
- b. Student outcomes
- SO-F. A recognition of professional, social, and ethical responsibility

**Brief List of Topics to be Covered:**

- Ecological Concepts
- Ecology of Life
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Course Name/Course Code: **Industrial Engineering Mathematics (IMEMATH)**  
Credits and Contact Hours: 3 units (3 hours lecture)  
Instructor: Dr. Charlle Sy

**Textbook and Online Resources:**

Grimaldi, R. (1999). Discrete and Combinatorial Mathematics, 4th Edition. USA: Addison Wesley Longman, Inc.

Anderson, J. (2004). Discrete Mathematics with Combinatorics, 2nd Edition. USA: Pearson Education, Inc.

Kolman, B., and Hill, D. (2005). Introductory Linear Algebra with Applications: An Applied First Course. Upper Saddle River, N.J. : Pearson/Prentice Hall.

Rheinboldt, W. (1979). Methods for Solving Systems of Nonlinear Equations. Philadelphia, Pa.: Society for Industrial and Applied Mathematics.

Brenan, James. Understanding Algebra. Retrieved on March 30, 2014. Retrieved from [http://www.jamesbrennan.org/algebra/systems/solution\\_set.htm](http://www.jamesbrennan.org/algebra/systems/solution_set.htm)

Numerical Methods: Fixed Point Iteration. Retrievoir (e) 4 (a) 4 .....n(. )4 o9 ( ) -10 (I) -7 (I) -7 (. )4 (.





Course Name/Course Code:       **Engineering Production Management (IMEPRO1)**  
Credits and Contact Hours:       3 units (2-hour lecture & 3-hour laboratory)  
Instructor:                         Lindley Bacudio

**Textbook and Online Resources:**

- Heizer, J., & Render, B. (2011). Principles of Operations Management (8th Ed.). New Jersey: Prentice Hall.
- Brown, S. (2013). Strategic Operations Management. Abingdon, Oxon: Routledge, Taylor & Francis.
- Meredith, J. R. (2013). Operations Management. Singapore: John Wiley & Sons.
- Schroeder, R. G. (2013). Operations Management: Contemporary Concepts and Cases. Singapore: McGraw-Hill Education.
- Stevenson, W.J. (2012). Production/ Operations Management. New York: Irwin/McGraw-Hill.
- Johnston, R. (2012). Service Operations Management: Improving Service Delivery. Harlow, England: Pearson Education.

**Course Information:**

- a. Description - This is an introductory course on production management, its concepts, activities, tools and techniques. The course covers demand forecasting, process and capacity planning, aggregate planning, supply chain management, inventory management, material requirements planning, learning curves, scheduling, and maintenance. Other topics, such as product design, location and layout planning, work design and measurement, etc. are covered in higher course of the production management series.
- b. Prerequisites/Co-requisites: INDUPRO (Soft Pre-requisite), QUAMET2 (Soft Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. The student will be able to analyze and describe key activities in a given situation or condition in operations management.
  2. The student will have the ability to design and determine best productive and reliable process strategy or methods of solution by applying appropriate concepts, tools and techniques.
- b. Student outcomes
  - SO-E. An ability to recognize, formulate, and solve engineering problems.
  - SO-J. An ability to use the techniques, skills, and engineering tools necessary for engineering and business practice.
  - SO-K. An ability to perform services in the form of analysis, design, preparation of plans, specifications, estimates, and implementation of: work standards, SPC, production planning and material control systems, manufacturing and service

facilities, operations research models for production and operations, and information systems.

**Brief List of Topics to be Covered:**

- Introduction to Production/ Operations Management
- Forecasting
- Process Strategy, Capacity Planning and Line Balancing
- Supply Chain Management (Overview)
- Inventory Management
- Aggregate Planning
- Material Requirements Planning (MRP)
- Just-in

Course Name/Course Code: **Methods and Work Study (IMEPRO2)**  
Credits and Contact Hours: 4 units (4-hour lecture)  
Instructor: Giselle Joy C. Esmeria

**Textbook and Online Resources:**

- Atienza, R.V. (2011). Work Measurement (with focus on Time Study). Manila: Polystar Printing Press for National Wages and Productivity Commission
- Niebel B. and. Freivalds, A.. (2009)Niebel's Methods, Standards and Work Design (12<sup>th</sup> edition). Boston: McGraw Hill.
- Atienza, R.V. (2012).Transformative Organization Management Manila: Rex Publishing
- Besterfield, Dale H. (2013). Quality Improvement. New Jersey: Pearson.
- Shaffie, Sheila and Shahbazi, Shahbaz. (2012). Lean Six Sigma. New York: McGraw-Hill.
- Taylor, F. (1911). Retrieved from  
<http://www.wissensnavigator.com/documents/TaylorScientificManagement.pdf>
- Niebel B. and. Freivalds, A.. (2009)Niebel's Methods, Standards and Work Design (11<sup>th</sup> edition) retrieved from  
<http://highered.mheducation.com/sites/0072468246/index.html> on September 12, 2014
- Freivalds, A.(2012) IE 327: Introduction to Work Design Course Syllabus retrieved from

6.

Course Name/Course Code: **Statistical Quality Control for IE Majors  
(IMEPRO3)**  
Credits and Contact Hours: 3 units (3 hours lecture)  
Instructor: Dr. Willy F. Zalatar

**Textbook and Online Resources:**

- Montgomery, Douglas (2009). Introduction to Statistical Quality Control 6th edition. Singapore: John Wiley & Sons, Inc.
- Barone, Stefano and Franco, Eva L. (2012). Statistical and Managerial Techniques for Six Sigma Methodology: Theory and Application. West Sussex, Wiley.
- Bass, Issa and Barbara Lawton (2009). Lean Six Sigma using SigmaXL and Minitab. New York: McGraw-Hill.
- Besterfield, Dale H. (2009). Quality Control. New Jersey: Pearson Education International.
- Besterfield, Dale H. (2013). Quality Improvement. New Jersey: Pearson.
- Evans, James and Lindsay, William (2011). The Management and Control of Quality 8th edition. Canada: South-Western, Cengage Learning.
- Evans, James R. and Lindsay, William M. (2014). Managing for Quality and Performance Excellence. Ohio: South-Western, Cengage Learning.
- Gygi, Craig and Williams, Bruce. (2012). Six Sigma for Dummies. New Jersey: John Wiley & Sons.
- Hoyle, David (2009). Improvement. Oxford: Butterworth-Heinemann.
- Mitra, Amitava (2008). Fundamentals of Quality Control & Improvement. New Jersey: Wiley.
- Montgomery, Douglas C., Jennings, Cheryl L., and Pfund, Michele E. (2011). Managing, Controlling, and Improving Quality. New Jersey: Wiley.
- Schonberger, Richard (2008). Best Practices in Lean Six Sigma Process Improvement: A Deeper Look. New Jersey: Wiley.
- Shaffie, Sheila and Shahbazi, Shahbaz. (2012). Lean Six Sigma. New York: McGraw-Hill.
- Control Chart. (n.d.). Retrieved from <http://asq.org/learn-about-quality/data-collection-analysis-tools/overview/control-chart.html>.
- What is Acceptance Sampling? (n.d.). Retrieved from <http://www.itl.nist.gov/div898/handbook/pmc/section2/pmc21.htm>.
- Winton, Don (1999.) Process Capability Studies. Retrieved from <http://profsite.um.ac.ir/~ahad/CPK.pdf>.

**Course Information:**

- a. Description – This course covers the basic principles, concepts, and philosophy of total quality management, statistical process control, process capability, acceptance sampling, reliability theory and maintenance management, ISO 9000, and Six-Sigma, as applied to both manufacturing and service companies.
- b. Prerequisites/Co-requisites: IMEPRO2 (Soft Pre-requisite), QUAMET2 (Hard Pre-requisite), LBYIMEA (Hard Pre-requisite)
- c. Required course

## **Specific Goals for the Course:**

- a. Specific outcomes
  1. The student will be able to identify the appropriate variables and attributes control chart for a given quality inspection situation.
  2. The student will have the ability to construct the appropriate variables and attributes control chart for a given quality inspection situation.
  3. The student will be able to demonstrate competence in identifying and constructing the appropriate variables and control charts for a given quality inspection situation.
  
- b. Student outcomes
  - SO-J: An ability to use the techniques, skills, and engineering tools necessary for engineering and business practice.
  - SO-K: An ability to perform services in the form of analysis, design, preparation of plans, specifications, estimates, and implementation of: work standards, SPC, production planning and material control systems, manufacturing and service facilities, operations research models for production and operations, and information systems.

## **Brief List of Topics to be Covered:**

Introduction



**Brief List of Topics to be Covered:**

- Understanding Marketing Management
- Defining Marketing for the Twenty-First Century
- Adapting Marketing to the New Economy
- Building Customer Satisfaction, Value, and Retention
- Market Analysis, Forecasting, and Planning
- Winning Markets Through Market-Oriented Strategic Planning
- Gathering Information and Measuring Market Demand
- Scanning the Marketing Environment; Analyzing Consumer Markets and Buyer Behavior
- Analyzing Business Markets and Business Buying Behavior
- Dealing with the Competition
- Identifying Market Segments and Selecting Target Markets
- Developing Market Strategies
- Positioning and Differentiating the Market Offering
- Developing New Market Offerings
- Shaping the Market Offering
- Setting the Product and Branding Strategy
- Designing and Managing Services
- Developing Price Strategies and Programs
- Managing and Delivering Marketing Programs
- Designing and Managing Value Networks and Marketing Channels
- Managing Retailing, Wholesaling, and Market Logistics
- Managing Integrated Marketing Communication; Managing Advertising, Promotion, Public Relations, and Direct Marketing; Managing the Sales Force



Course Name/Course Code: **Operations Research I (INOPER1)**  
Credits and Contact Hours: 3 units (3 hours lecture)

4. The student will be able to apply basic knowledge of mathematical theories and concepts in Identifying relationships among variables in modelling the appropriate system objectives and constraints.
5. The student will be able to apply basic knowledge of mathematical theories and concepts in performing sensitivity analysis.

b. Student outcomes

SO-A. An ability to apply knowledge of mathematics, physical and information sciences, and engineering sciences to the practice of industrial engineering.

**Brief List of Topics to be Covered:**

- Introduction to Operations Research
- History of Operations Research
- Applications of Operations Research
- Formulation of Linear Programming (LP)
- Models
- Product Mix Problem
- Feed Mix Problem
- Production Scheduling Problem
-

Course Name/Course Code: **Operations Research II (INOPER2)**  
Credits and Contact Hours: 3 units (3-hour lecture)  
Instructor: Mr.Dennis Cruz / Mr.Everett Ubiadas

**Textbook and Online Resources:**

2.

Course Name/Course Code:       **Operations Research 3 (INOPER3)**  
Credits and Contact Hours:       3 units (3 hours lecture)  
Instructor:                         Dr. Charlle Sy

**Textbook and Online Resources:**

Hillier, F., Lieberman, G. (2010). Introduction to Operations Research, 9<sup>th</sup> Edition.  
Singapore: McGraw-Hill Education.  
Albright, S.(2012). Management Science Modeling. Australia: South-Western/Cengage  
Learning  
Daellenbach, H. (2012). Management Science: Decision Making Through Systems  
Thinking. New York: Palgrave Macmillan  
Hillier, F. (2011). Introduction to Management Science: A Modeling and Case Studies  
Approach With Spreadsheets. Boston: McGraw-Hill  
Denardo, E. (2011). Linear Programming and Generalizations: A Problem-Based  
Introduction With Spreadsheets. Boston, MA: Springer U.S.  
Heinz, S. (2011). Mathematical Modeling. Berlin, Heidelberg: Springer  
Michael Trick's Operations Research Blog at <http://mat.gsia.cmu.edu/blog/>  
Operations Research Society of the Philippines at <http://orsp.org.ph>

**Course Information:**

- a. Description - This course introduces the fundamental concepts of decision theory, game theor



Course Name/Course Code:

**Brief List of Topics to be Covered:**

- Fundamental of Systems
- Definition of Systems and Systems Approach
- Systems Development Life Cycle
- Application of the Systems Approach
- Systems Study Outline
- The Research Problem and Its Setting
- Review of Related Literature
- Kepner Tregoe (KT) Situation Appraisal
- Problem Identification
- Defining Concerns
- Breaking Down Concerns Into Manageable Components
- Problem Prioritization
- Problem Analysis Techniques
- KT Problem Analysis Technique
- Affinity/ Relationship Diagram
- Cause and Effect Analysis
- Stream Diagnosis





4. The student will be able to identify and demonstrate application of simulation concepts in a real world example.
- b. Student outcomes
- SO-H: An understanding of the effects of engineering solutions in a comprehensive context.

**Brief List of Topics to be Covered:**

- Introduction to Manual Simulation using Excel
- Understanding Random Numbers and Monte Carlo Simulation
- Simulation Using ARENA
- Simulation Using Promodel
- Output Analysis of a Single Model
- Comparison and Evaluation of Alternative Designs

Course Name/Course Code: **System Dynamics Laboratory (LBYIEEH)**  
Credits and Contact Hours: 1 unit (3-hour laboratory)  
Instructor: Dennis T. Beng Hui

**Textbook and Online Resources:**

Business Dynamics by J. Sterman, 2001, McGraw Hill  
System Dynamics Modelling: A Practical Approach by R.G. Coyle, 1996, Chapman and Hall  
The Fifth Discipline by P. Senge, 1990, Currency Doubleday  
Industrial Dynamics by J. Forrester, 1961, MIT Press  
Introduction to System Dynamics Modelling with Dynamo by G. Richardson, 1981, Productivity Press  
Introduction to Computer Simulation: A System Dynamics Approach by Nancy Roberts (1982), Addison Wesley  
Hillier, F. (2011). Introduction to Management Science: A Modeling and Case Studies Approach With Spreadsheets. Boston: McGraw-Hill  
Denardo, E. (2011). Linear Programming and Generalizations: A Problem-Based Introduction With Spreadsheets. Boston, MA: Springer U.S.  
Heinz, S. (2011). Mathematical Modeling. Berlin, Heidelberg: Springer  
Taha, H. (2007). Operations Research: An Introduction, 8<sup>th</sup> Edition. New Jersey: Prentice Hall.  
Ravindran, A. (2009). Operations Research Applications. Florida: CRC Press/Taylor & Francis Group.  
<http://www.clexchange.org/curriculum/roadmaps/>  
<http://www.systemdynamics.org>  
<http://www.systems-thinking.org>

**Course Information:**

a.

b. Student outcomes

SO-H. An understanding of the effects of engineering solutions in a comprehensive context.

**Brief List of Topics to be Covered:**

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Course Name/Course Code: **Advanced System Dynamics Laboratory (LBYIEEI)**  
Credits and Contact Hours: 1 unit (3 hour lab)  
Instructor: Dr. Jose Edgar Mutuc

**Textbook and Online Resources:**

- Sterman, J. (a) (2001), Business Dynamics, McGraw-Hill.  
Forrester, J. (1961), Industrial Dynamics, MIT Press  
Richardson, G. (1986), Problems with causal-loop diagrams, System Dynamics Review, Vol. 2 (no. 2, Summer 1986), pp.158-170.  
Senge, P. (1990), The Fifth Discipline, Currency Doubleday  
Saeed, K. (1999), Defining a problem or constructing a reference mode, Social Science and Policy Studies Department, Worcester Polytechnic Institute, Worcester, MA.  
Sterman, J. (b) (2002), All Models are Wrong: Reflections on Becoming a Systems Scientist, System Dynamics Review, Vol. 18, No. 4, pp. 501 – 531.  
Hillier, F. (2011). Introduction to Management Science: A Modeling and Case Studies Approach With Spreadsheets. Boston: McGraw-Hill  
Denardo, E. (2011). Linear Programming and Generalizations: A Problem-Based Introduction With Spreadsheets. Boston, MA: Springer U.S.  
Heinz, S. (2011). Mathematical Modeling. Berlin, Heidelberg: Springer  
Taha, H. (2007). Operations Research: An Introduction, 8<sup>th</sup> Edition. New Jersey: Prentice Hall.  
Ravindran, A. (2009). Operations Research Applications. Florida: CRC Press/Taylor & Francis Group.  
System Dynamics Society. Retrieved from <http://www.systemdynamics.org/>  
Morecroft, J. (1982). A Critical Review of Diagramming tools for conceptualizing feedback System Models. Retrieved from <http://www.systemdynamics.org/dynamica/articles/81/5.pdf>  
Richardson, George (1986). Problems with Casual Loop Diagram. Retrieved from <http://www.systems-thinking.org/intst/d-3312.pdf>  
Saeed, K. (2000). Retrieved from [http://www.wpi.edu/Image1Tm/741Tf\( \)m](http://www.wpi.edu/Image1Tm/741Tf( )m)

## **Specific Goals for the Course:**

### a. Specific outcomes

1. The student will have the ability to apply the basic knowledge of physical, information and social theories and concepts needed in identifying a reference mode and developing causal loop models
2. The student will be able to apply the basic knowledge of mathematical theories and concepts formulating equations and simulating the stock flow diagrams.

### b. Student outcomes

SO-B An ability to design and conduct experiments, as well as to analyze and interpret data.

SO-H An understanding of the effects of engineering solutions in a comprehensive context

## **Brief List of Topics to be Covered:**

- Review of System Dynamics
  - Review of SD concepts
  - Review of SD Methodology
- Advanced reference mode analysis
- Modelling variables and processes
- Decisions and decision making
- Base runs and term projects
-



4. The student will be able to determine the impact of the productivity application developed to the work done by the user
- b. Student outcomes
- SO-A. An ability to apply knowledge of mathematics, physical and information sciences, and engineering sciences to the practice of industrial engineering
  - SO-C. An ability to design, build, improve, and install systems or processes which are efficient, effective, as well as robust to meet desired needs within identified constraints.
  - SO-H. An understanding of the effects of engineering solutions in a comprehensive context.

**Brief List of Topics to be Covered:**

- Introduction to VBA
  - Using Macros
  - Basics of the editor
  - Editing Macros
  - Creating Code from Scratch
- Understanding VBA



Course Name/Course Code:       **Structured Query Language Database Laboratory (LBYIET2)**  
Credits and Contact Hours:       1 unit (3-hour laboratory)  
Instructor:                         Ronald Polancos

**Textbook and Online Resources:**

Hernandez, Michael (2013). Database Design for Mere Mortals: A Hands-On Guide to Relational Database Design 3rd Ed. Edwards Brothers Mallo  
Connolly, T. M., & Begg, C. E. (2014). Database systems: a practical approach to design, implementation, and management. Pearson International.  
Provost, F., & Fawcett, T. (2013). Data Science for Business: What you need to know about data mining and data-analytic thinking. O'Reilly Media, Inc  
Kroenke, D., & Auer, D. (2013). Database: Processing (13<sup>th</sup> edition). Pearson International.  
Morris, S., Rob, P., & Coronel, C. (2013), Database Principles: Fundamentals of Design, Implementation, and Management (10<sup>th</sup> edition). Cengage Learning Asia  
Introduction to Databases. <https://class2go.stanford.edu/db/Winter2013/preview/>  
Database application. [http://en.wikipedia.org/wiki/Database\\_application](http://en.wikipedia.org/wiki/Database_application)  
Database Design. Retrieved from [http://en.wikipedia.org/wiki/Database\\_design](http://en.wikipedia.org/wiki/Database_design)

**Course Information:**

- a. Description - This is the laboratory course to an introductory course to database applications. Laboratory cases will cover topics on database design and Visual Basic for Applications.
- b. Prerequisites/Co-requisites: IEBSDAT (Co-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  - 1. The student will be able to apply the basic knowledge of information science concepts in developing database applications
  - 2. The student will be able to identify and recognize system problems that can be addressed by a database applications
  - 3. The student will be able to conceptualize database applications that meet business requirements
  - 4. The student will be able to develop database applications
  - 5. The student will be able to identify decisions that can be made using the database application that was developed
- b. Student outcomes
  - SO-A. An ability to apply knowledge of mathematics, physical and information sciences, and engineering sciences to the practice of industrial engineering

SO-C. An ability to design, build, improve, and install systems or processes which

Course Name/Course Code: **Enterprise Applications Laboratory (LBYIET3)**  
Credits and Contact Hours: 1 unit (3-hour laborator

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Course Name/Course Code: **LBYIMEA**  
**(Advanced Quantitative Methods-Laboratory)**  
Credits and Contact Hours: 1 unit (3-hour laboratory)  
Instructor: Mr.Eric A. Siy

**Textbook and Online Resources:**

Montgomery D. C. (2009) Design and Analysis of Experiments, 7th Edition. Asia: John

b. Student outcomes

SO-B An ability to design and conduct experiments, as well as to analyze and interpret data.

SO-G An ability to effectively communicate orally and in writing using the English

Course Name/Course Code: **Physical Ergonomics Laboratory (LBYIMEB)**  
Credits and Contact Hours: 1 unit (3 hours laboratory)  
Instructor: Ms. Jazmin Tangsoc

**Textbook and Online Resources:**

- Bridger, R.S. (2009) Introduction to Ergonomics, 3rd edition, CRC Press
- Helander, M. (2006) A Guide to Human Factors and Ergonomics. Florida: CRC Taylor and Francis
- Kroemer, K.H.E, Kroemer H.B. & Kroemer-Elbert, K.E. (latest edition) Ergonomics How to Design for Ease and Efficiency 2nd edition, Prentice-Hall, New Jersey.
- Kumar, S. (2008) Biomechanics in Ergonomics, CRC Press
- Marras, W. & Karwowski, W. (2006) The Occupational Ergonomics Handbook. Florida: CRC/Taylor and Francis.
- Salvendy, G. (2006) Handbook of Human Factors and Ergonomics 3rd edition. New Jersey: John Wiley.
- Duffy, V. (2011) Advances in Human Factors, Ergonomics, and Safety in Healthcare. Florida: CRC Press.
- Bhise, V. (2012) Ergonomics in the Automotive Design Process. Florida: CRC Press.
- McCauley-Bush, P. (2012) Ergonomics: Foundational Principles, Applications, and Technologies. Florida: CRC Press.

2. The student will be able to measure noise levels, identify deviation from standards, and propose interventions
- 3.

Course Name/Course Code: **Cognitive Ergonomics Laboratory (LBYIMEC)**  
Credits and Contact Hours: 1 unit (3 hours laboratory)  
Instructor: Dr. Rosemary R. Seva

**Textbook and Online Resources:**

Douglas, I., & Liu, Z. (Eds.). (2011). *Global Usability*. London: Springer.  
Goldstein, E. B. (2009). *Sensation and perception* (8th ed.). London: Wadsworth.  
Karwowski, W., Soares, M., & Stanton, N. (Eds.). (2011). *Human Factors and Ergonomics in Consumer Product Design: Methods and Techniques* London: CRC Press.  
Sternberg, R. (2008). *Cognitiv*



6. The student will have the ability to make an oral presentation about the experiment report
- b. Student outcomes
- SO-B. An ability to design and conduct experiments as well as to analyze and interpret data
  - SO-D. An ability to work effectively in multi-disciplinary and multi-cultural teams
  - SO-G. An ability to effectively communicate orally and in writing using the English language

**Brief List of Topics to be Covered:**

- Signal Detection Theory
- Change Detection
- Information Theory
- Memory
-

Course Name/Course Code: **Methods Engineering Laboratory (LBYIMEE)**  
Credits and Contact Hours: 1 unit (3 hours laboratory)  
Instructor: Giselle Joy C. Esmeria

**Textbook and Online Resources:**

- Niebel, B and Frievalds, A. (2002). *Methods, Stands, & Work Design*, New York: McGraw Hill
- Groover, M. P. (2007). *Work Systems: The Methods, Measurement & Management of Work*, Prentice Hall,
- Chang, Tien-Chien, Richard A Wysk, and Hsu-Pin Wang (2006). *Computer-Aided Manufacturing* (3<sup>rd</sup> ed). New Jersey: Pearson Education, Inc.
- Groover, M. P. (2008). *Automation, Production Systems, and Computer-Integrated Manufacturing*. New Jersey: Prentice Hall.
- Atienza, R. (2011) *Handbook on Work Measurement*.(Beta Ed.) Manila: PolyStar Graphics
- AMHSA - Representing the UK Logistics Automation and Handling Industry. (n.d). Retrieved from <http://www.amhsa.co.uk>.
- Robotics Online. (2008). Retrieved from <http://www.robotics.org>.

**Course Information:**

- a. Description - This is a three-hour per week laboratory class for application of tools and technique on work improvement and measurement
- b. Prerequisites/Co-requisites: IMEPRO2
- c.

**Brief List of Topics to be Covered:**

- Line Balancing/Work Content
  - Determining bottleneck, capacity, productivity, utilization of the process using precedence diagram with partitioning
  - Balancing of operation line.
  - Determining and eliminating additional work content.
  
- Process Charting and Analysis
  - Documentation and Improvement of Process Using cue or matrix FPC and FD
  - Documentation and Improvement of Process Using OPC and FD
  - Documentation and Improvement of Process Using MAC and time-

Course Name/Course Code: **Product Design Laboratory (LBYIMEF)**  
Credits and Contact Hours: 1 unit (3 hour laboratory)  
Instructor:

**Textbook and Online Resources:**

Boothroyd, G. (2005) Assembly Automation and Product Design Taylor and Francis





7. The student will be able to understand the delivery of research result, conclusion, and recommendation of future studies.
8. The student will be able to write a thesis proposal on the chosen topic that





- SO-F. A recognition of professional, social, and ethical responsibility  
SO-G. An ability to effectively communicate orally and in writing using the English language

**Brief List of Topics to be Covered:**

- Course overview
- Definition of health and safety
- Health and safety movement, then and now
- Ethics and Safety
- The Modern Health and Safety Team
- Promoting Safety
- Assessing Facilities for Safety and Health
- Personal Protective Equipment
- Human Error and System Caused Human Error
- Accidents and their effect on Industry
- Impact of Automation in the Workplace
- Risk management introduction
- Fault tree analysis
- Event analysis
- Assessing communities' safety and health



**Brief List of Topics to be Covered:**

- Review on Model Formulations
- Large Scale Linear Programming
-

Course Name/Course Code:       **Operations Research Elective 2 (ORE2LEC)**  
Credits and Contact Hours:       3 units (3-hour lecture)  
Instructor:                         Dennis Cruz

**Textbook and Online Resources:**

- Heinz, S. (2011). *Mathematical Modeling*. Berlin, Heidelberg: Springer
- Albright, S. (2012). *Management Science Modeling*. Australia: South-Western/Cengage Learning
- Beck, A. (2014). *Introduction to Nonlinear Optimization: Theory, algorithm, and Application with MATLAB*.
- Hillier, F. (2011). *Introduction to Management Science: A Modeling and Case Studies Approach with Spreadsheets*. Boston, MA: Springer U.S.
- Ruszczynski, A. (2011). *Nonlinear Optimization*. Princeton University Press.
- Lange, K. (2013). *Optimization*. Springer Science and Business Media.
- Rao, S. (2009). *Engineering Optimization: Theory and Practice* 4<sup>th</sup> Edition. Wiley-

- b. Prerequisites/Co-requisites: PRCIEE1 (Hard Pre-requisite)
- c. Elective course

**Specific Goals for the Course:**

- a. Specific outcomes
  - 1.

Course Name/Course Code: **Operations Research Elective 3 (ORE3LEC)**  
Credits and Contact Hours: 3 units (3-hour lecture)  
Instructor: Dennis Cruz

**Textbook and Online Resources:**

Hillier, F.S., and Lieberman, G.J.(2010). Introduction to Operations Research 9<sup>th</sup> Edition.  
McGraw Hill, Singapore.  
Ignizio, J

2. The student will be able to formulate and solve multiple objective and multiple attribute decision making models using the appropriate methodology
3. The student will be able to use proficiently the software (EXCEL-Solver and GAMS) in solving LP and ILP Models
- 4.

Course Name/Course Code: **Industrial Engineering Practicum (PRCIEE1)**  
Credits and Contact Hours: 2 units  
Instructor: Dennis Cruz

**Textbook and Online Resources:**

None

**Course Information:**

- a. Description - On-the-Job training will expose the students to the different tasks and responsibilities being assigned to an industrial engineer. This includes exposure to manufacturing companies, service systems, industrial or power plants, research activities, design projects and others
- b. Prerequisites/Co-requisites: PERSEF2 (Hard Pre-requisite), FACPLAD (Soft Pre-requisite), IMEPRO3 (Soft Pre-requisite), PRODSCI (Soft Pre-requisite), LBYIMEF (Soft Pre-requisite), INOPER3 (Soft Pre-requisite), SYSINFO (Soft Pre-requisite), LBYME32 (Soft Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. The student will develop and instill a positive attitude, self-confidence and self-motivation required of a responsible professional in handling tasks.
  2. The student will be able to recognize the various operations, processes, techniques and controls presently used in industry.
- b. Student outcomes
  - SO-G. An ability to effectively communicate orally and in writing using the English language.
  - SO-J. An ability to use the techniques, skills, and engineering tools necessary for engineering and business practice.

**Brief List of Topics to be Covered:**

- 480 hours of industry exposure (equivalent to 12 weeks)
- Monthly meeting with the faculty adviser



Course Name/Course Code: **Production elective 1 (PRO1LEC)**  
Credits and Contact Hours: 3 units (3-hour lecture)  
Instructor: Anna Siriban Manalang

**Textbook and Online Resources:**

Hopp, Wallace and Mark L. Spearman, *Factory Physics, Foundation of Manufacturing Management*, Irwin, Inc., 1996  
Gibson, P., G. Greenhalgh and R. Kerr, *Manufacturing Management, Principles and Concepts*, Chapman and Hall, 1995.  
Krajewski, Lee and Larry P. Ritzaman, *Operations Management, Strategy and Analysis*, Addison-Wesley Publishing Company, 1996.

**Course Information:**

- a. Description - This course covers advanced concepts in production capacity management, production scheduling and process improvement. It builds on the concepts learned in PRODMA1 and refines them further. These concepts include capacity management, bottleneck dynamics, OPT, operations performance measurement, and human learning applied to production/operations management.
- b. Prerequisites/Co-requisites: PRCIEE1 (Hard Pre-requisite)
- c. Elective course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. The student will be able to use relevant information for problem analysis by identifying the right performance measures
  2. The student will be able to use appropriate problem-solving approaches and solution models for solving system problems under study
  3. The student will be able to show integration of all learning from previous courses by utilizing them appropriately in the case studies, assignments
- b. Student outcomes
  - SO-A. An ability to apply knowledge of mathematics, physical and information sciences, and engineering sciences to the practice of industrial engineering
  - SO-I. An ability to engage in life-long learning and an understanding of the need to keep current of the developments in the specific field of specialization.

**Brief List of Topics to be Covered:**

- Dynamic lot sizing: To manufacture or to stock?
- Wagner-Whitin procedure
- Factory Dynamics
- Mass production manufacturing: history, philosophy, evolution.
- Capacity Measurement and Management
- Assembly Line Balancing

- The Corrupting Influence of Variability
- The Effects of Variability in Production plans using Capacity Information.
- Production Dice Game
- Alternative Production flow setups
- Bottleneck dynamics
- Disruptions in Production flow
- Machine setups. Shigeo Shingo's Single-Minute SMED philosophy.
- Wastages: Muda, Mura and Muri
- Lean Manufacturing
- 5S Housekeeping rules
- The Human Element in Operations Management Fear, Burnout, Self-interest, Organizational culture
- Learning curves
- Poka Yoke: Devices that Minimizes mistakes on the shopfloor
- Other TQM approaches to Process Improvement
- Production Performance Measurements.
- Throughput, WIP and Cycle Time
- Push and Pull Production Systems
- Manufacturing information systems: Reports needed by management.
- Trend Investigations, Pareto Analysis
- Eliyahu Goldratt's Optimized Production Technology (OPT)
- Goldratt's factory management concepts.
- Drum-Buffer-Rope method of synchronized manufacturing.
- Aggregate and Workforce Planning
- Product Mix Planning
- Workforce Planning

Course Name/Course Code: **Production Management Elective: Scheduling (PRO2LEC)**  
Credits and Contact Hours: 3 units (3-hour lecture)  
Instructor: Eric Siy

**Textbook and Online Resources:**

Baker, Kenneth and Triesch, Dan (2009). Principles of Sequencing and Scheduling. New Jersey: John Wiley and Sons.  
Baker, Kenneth. (1974). Introduction to Sequencing and Scheduling. NJ: Wiley.  
Hillier, Frederick (2011) Introduction to Management Science: a Modeling and Case Studies Approach with Spreadsheets. Boston: McGraw-Hill.  
Pinedo, Michael (2012). Scheduling: Theory, Algorithms and Systems. NY: Springer.  
Pinedo, Michael and Chao Xiuli (1999). Operations Scheduling with Applications in Manufacturing and Services. Singapore: McGraw-Hill.  
Sule, Dileep (2008) Production Planning and Industrial Scheduling: Examples, Case

b. Student outcomes

- SO-I. An ability to engage in life-long learning and an understanding of the need to keep current of the developments in the specific field of specialization.
- SO-J. An ability to use the techniques, skills, and engineering tools necessary for engineering and business practice
- SO-K. An ability to perform services in the form of analysis, design, preparation of plans and implementation of production planning and material control systems, manufacturing and service facilities, operations research models for

**Brief List of Topics to be Covered:**

- Introduction to Scheduling problems, and scheduling criteria
- Review of Dispatching rules
- Single Machine Scheduling
  - Moore, Lawler, Smith algorithms
  - Branch and Bound approach
- Parallel Machine Scheduling
  - Identical machines
  - non-identical machines.
- Batch Scheduling
  - EOQ-type production sequencing



SO-K An ability to perform services in the form of analysis, design, preparation of

Course Name/Course Code: **Product Design (PRODSCI)**  
Credits and Contact Hours: 1 unit (1-hour lecture)  
Instructor: Dr. Alma Maria Jennifer Gutierrez

**Textbook and Online Resources:**

- Ulrich, K and Eppinger, S. (2012). Product Design and Development, 5th edition. Mc-Graw Hill, USA
- Baxter, M. (1995). Product design: a product guide to systematic methods of new product development. Chapman and Hall, London
- Boothroyd, G. (2005). Assembly Automation and Product Design. Taylor and Francis, Boca Raton, FL, USA.
- Cross, N. (2008). Engineering Design Methods: Strategies for Product Design. Chichester Wiley
- Haskell, B. (2004). Portable Electronics Product Design and Development: for Cellular Phones, PDAs, Digital Cameras. Mc-Graw-Hill, USA.
- Karwowski, W., Soares, M. and Stanton, N. (Eds) (2011). Human Factors and Ergonomics in Consumer Product Design Methods and Techniques. CRC Press Taylor and Francis Group. Boca Raton, FL., USA
- Morris, R. (2009). The Fundamentals of Product Design. Lausanne: AVA
- Shetty, D. (2002). Design for product success. Dearborn, MI. Society of Manufacturing Engineers.
- Bordegoni, M. (2011). Innovation in Product Design From CAD to Virtual Prototyping. Springer, London
- Product Design Forums. Retrieved from <http://www.productdesignforums.com/> Date retrieved: November 7, 2013
- Stanford Design Program Retrieved from <http://designprogram.stanford.edu/> Date retrieved: November 7, 2013
- Design and Emotion. Retrieved from <http://www.designandemotion.org/> Date retrieved: November 7, 2013

**Course Information:**

- a. Description - This is an introductory course in product design. Lectures include topics on product design framework, product development, quality function deployment, creativity techniques, prototyping, risk, reliability, safety and failure mode and effects analysis, legal and ethical issues in design and intellectual property. The course also relates human limitations to the design of effective products.
- b. Prerequisites/Co-requisites: ERGCOG2 (Soft Pre-requisite), IEMECON (Soft Pre-requisite), LBYME32 , LBYIME31 (Soft Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. The student will have the ability to conduct critical review on literature about product design theories and methodology.

b. Student outcomes

SO-I. An ability to engage in life-long learning and an understanding of the need to keep current of the developments in the specific field of specialization.

**Brief List of Topics to be Covered:**

- Course overview
- Introduction to Product design
- Product Design Framework
- Identifying customer needs
- Quality function deployment HOQ 1 & 2
- Creativity Technique: Brainstorming, Bionics, Check listing, Idea Diagram
- Prototyping
- Risk, Reliability, and Safety
- Failure Mode and Effects Analysis
- Legal and Ethical Issues in Design
- Intellectual Property





b. Student outcomes

SO-H. An understanding of the effects of engineering solutions in a comprehensive context.

SO-K. An ability to perform services in the form of analysis, design, preparation of plans, specifications, estimates of work standards, statistical process control systems, production planning and materials control systems, manufacturing and service facilities, operations research models for production and operations, and information systems

SO-D. An ability to work effectively in multi-disciplinary and multi-cultural teams

**Brief List of Topics to be Covered:**

- Definition of Project and Project Cycle
- Project Cost Estimate, Financial Packaging
- Introduction to Market, Market Forecasting Tools, Industry of Project Analysis
- Appraisal of Project's Market Viability, Estimating Sales Revenues of the Project
- Introduction to Technical Feasibility, Critical Variables in Technical Analysis
- Materials and Equipment Balancing, Production Planning for the time horizon
- Management and Organization, Management Functions, Salary structure design,



b. Student outcomes

SO-A An ability to apply knowledge of mathematics, physical and information sciences, and engineering sciences

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Course Name/Course Code: **Advanced Quantitative Methods-Lecture (QUAMET2)**  
 Credits and Contact Hours: 2 units (2 hours lecture)  
 Instructor: Bryan Gobaco

**Textbook and Online Resources:**

Walpole R. E., Myers R. H., Myers S. L. (2007) *Probability and Statistics: For Engineers and Scientists*, 8<sup>th</sup> Edition. Singapore: Prentice Hall.  
 Lindeman R. H., Meranda P. F., Gold R. Z. (1980) *Introduction to Bivariate and Multivariate Analysis*. New York: Scott, Foresman and Company.  
 Hair Jr. J. F., Anderson R. E., Tatham R. L., Black W. C. (2006) *Multivariate Data Analysis*, 6<sup>th</sup> Edition. Upper Saddle River, New Jersey: Prentice Hall.  
 Lattin J., Carroll J. D., Green P. E.. (2004) *Analyzing Multivariate Data*. Pacific Grove, CA : Thomson Brooks/Cole.  
 Johnson R. A., Wichern D. W. (2007) *Applied Multivariate Statistical Analysis*. 6<sup>th</sup> Edition. Upper Saddle River, New Jersey: Prentice Hall.  
 Keith T. Z. (2006) *Multiple Regression and Beyond*. USA: Pearson Education  
 Multivariate Statistics Help, Data Analysis Training and Tutorial Services.  
<http://www.researchconsultation.com/multivariate-statistics-analysis-help-training.asp>  
 Statistics Education Links. <https://www.causeweb.org/resources/links.php>

**Course Information:**

- a. Description - The first half of the course covers the concepts of univariate and bi-variate non-parametric hypothesis testing, interval estimation and linear regression. The latter half will tackle some analytical tools for dependence and interdependence in a multivariate setting. Specifically, these are: multiple regression, discriminant analysis and canonical correlation analysis.
- b. Prerequisites/Co-requisites: QUAMET1 (Hard Pre-requisite), LBYIMEA
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  - 1. The student will have the ability to know when non-parametric hypothesis testing is appropriate and which test should be used.
  - 2. The student will have the ability to provide the interval estimates for different population parameters.
  - 3. The student will have the ability to compute for sample sizes for statistical studies.
  - 4. The student will have the ability to model dependence relationships between

6. The student will have the ability to distinguish between the different statistical techniques and understand or exhibit the interrelatedness or linkages between these.
7. The student will be able to interpret the statistical results in the context of the data



3. The student will be able to identify customer behavior and needs
4. The student will be able to identify mismatches between customer behavior and needs with the service system of retail store
5. The student will be able to identify alternative ways of delivering service in the food service systems
6. The student will be able to design the improved service system

b. Student outcomes

SO-I. An ability to engage in life-long learning and an understanding of the need to keep current of the developments in the specific field of specialization.

**Brief List of Topics to be Covered:**

- Introduction to Food Service Industry
- The Nature of Food Services
  - Characteristics and peculiarities of Food Services
  - Classifications of food service using service process matrix
- Food Service Quality: Focus on Safety, Cleanliness, Timeliness, and Customer Focus
  - The SERVQUAL Instrument as applied in Food Service
  - Food Safety Inspection System (Hazard Analysis and Critical Point)
  - Food Microbiology
  - Employee Health, Personal Hygiene and Safety
  - General Food Flow Chart
  - Cleaning and Sanitation Facilities
  - Customers of the Food Industry
  - Customer Satisfaction and Protection
  - Methods of Assembly, Delivery and Distribution
- Operational Functions
  - Menu Planning and Writing
  - Demand Management and Operation Planning
  - Purchasing
  - Receiving, Storage and Inventory Control



Course Name/Course Code: **Retail Management for IE (RETMANT)**  
Credits and Contact Hours: 2 units (2-hour lecture)  
Instructor: Dr. Jose Edgar Mutuc

**Textbook and Online Resources:**

- Levy, B. and Weitz, B. Retailing management (2014) New York, NY : McGraw-Hill Education
- Berman, B. and Evans, J. (2013). *Retail Management* , 12th edition. New Jersey: Pearson Education
- Fitzsimmons, J. A., Fitzsimmons M. J. (2014). *Service Management: Operations Strategy and Information Technology*, 13<sup>th</sup> Edition Singapore McGraw Hill.
- Hubner, A. (2011), Category Retail Management, Berlin Springer Verlag
- Lewinson, D. and DeLoizer, M. W. (1986) *Retailing*, 2<sup>nd</sup> edition, Ohio, Bell and Howell Co.
- Lo, K. P. Y. (2011) Designing Service for Positive Relational Messages. International Journal of Design. University of Loughborough. Retrieved from <http://www.ijdesign.org/ojs/index.php/IJDesign/article/viewFile/898/333>
- Li, C. (2010) A Facility Layout Design Methodology for Retail Environments. Phd Dissertation. University of Pittsburg. Retrieved from ---
- Tincher, J. (2012) Drivers: The Secret to Creating a Great Customer Experience. Heart of the Customer. Retrieved from <http://www.heartofthecustomer.com/wp-content/uploads/2012/02/Drivers-the-Secret-to-a-Great-Customer-Experience-White-Paper.pdf>
- Tincher, J. (2012) ShopperEducation: The Hidden Casualty of Price Wars. Heart of the Customer. Retrieved from <http://www.heartofthecustomer.com/wp-content/uploads/2012/04/Shopper-Education-The-Hidden-Casualty-of-Price-Wars-White-Paper.pdf>
- Tincher, J. (2012) Measuring the Segmented Customer Experience. Heart of the Customer. Retrieved from <http://www.heartofthecustomer.com/wp-content/uploads/2012/01/Measuring-the-Segmented-Customer-Experience-White-Paper.pdf>
- Tincher, J. (2012) Creating a Customer-Focused Customer Experience Journey Map. Heart of the Customer. Retrieved from

## **Specific Goals for the Course:**

- a. Specific outcomes



b. Student outcomes

SO-E. An ability to recognize, formulate, and solve engineering problems

SO-G.

Course Name/Course Code: **Introduction to System Dynamics (SYSDYN1)**  
Credits and Contact Hours: 1 unit (1-hour lecture)  
Instructor:

b. Student outcomes

SO-H. An understanding of the effects of engineering solutions in a comprehensive context.

**Brief List of Topics to be Covered:**

- Introduction to System Dynamics
- 11 Laws of Systems Thinking
- Detecting and understanding types of patterns: Common Modes of Behavior
- Causal Loop Diagrams
- Conventions in modeling feedback loops. Causal loop examples
- Understanding and identifying archetypes
- Stock flow diagrams. Levels and Rates. Examples of Stock Flow Diagrams
- Model Principles for formulating dynamo and vensim model
- System dynamics modeling techniques.
  - Modeling complex SD
- 9 Leverage Points

Course Name/Course Code: **Advanced System Dynamics (SYSDYN2)**  
 Credits and Contact Hours: 1 unit (1-hour lecture)  
 Instructor: Dr. Jose Edgar Mutuc

**Textbook and Online Resources:**

Sterman, J. (a) (2001), *Business Dynamics*, McGraw-Hill.

Davies, M., Musango, J. and Brent, A. (2014), *A systems approach to understanding the effect of Facebook use on the quality of interpersonal communication*, International System Dynamics Conference, Delft, Netherlands, November.

Forrester, J. (1961), *Industrial Dynamics*, MIT Press

Gani, A. and Größler, A. (2014), *Linking brand equity and customer equity: A system dynamics perspective*, International System Dynamics Conference, Delft, Netherlands, November.

Heffron, P. (2014), *Operationalizing Systems Thinking and System Dynamics Principles, Methods, and Tools in Government Policy and Management*, International System Dynamics Conference, Delft, Netherlands, November.

Kuipers, J. (2014) *Formal Behaviour Classification under Uncertainty Applying Formal Analysis to System Dynamics*, International System Dynamics Conference, Delft, Netherlands, November.

Mutuc, J. E. (2014), *Simulating Non-Structural Factors in Disaster Mitigation: The Case of Typhoon Ondoy on the Marikina Watershed*, DLSU Research Congress, De La Salle University, Manila, March.

Mutuc, J. E. (2012), *Unexpected Dynamics of Simple Improvement Programs: the 5S Case*, International Conference on Asia Pacific Business Innovation and Technology Management, Microtel MOA, Manila, October.

Pruyt, E., Auping, W., Kwakkel, J. and Thissen, W. (2015), *Better Robustly Right than Accurately Wrong*, International System Dynamics Conference, Cambridge, Massachusetts, USA, July.

Pruyt, E. (2015), *The Ebola Outbreak in West Africa: Important Lessons about Modeling & Simulating Uncertain Dynamic Issues*, International System Dynamics Conference, Cambridge, Massachusetts, USA, July.

Pruyt, E. (2014), *System Dynamics and Uncertainty*, International System Dynamics Conference, Delft, Netherlands, November.

Richardson, G. (1986) *Problems with causal-loop diagrams*, System Dynamics Review, Vol. 2 (no. 2, Summer 1986), pp.158-170.

Rose, A. (2014), *An Exploration of the System Dynamics Field: a Model-Based Policy Analysis*, International System Dynamics Conference, Delft, Netherlands, November.

Senge, P. (1990), *The Fifth Discipline*, Currency Doubleday

Saeed, K. (1999), *Defining a problem or constructing a reference mode*, Social Science and Policy Studies Department, Worcester Polytechnic Institute, Worcester, MA.

**Course Information:**

- a. Description - This is an advanced course in system dynamics. The course deals with modeling more complex and dynamic m

environments. It highlights decisions and policies of the system that are critical in system behavior.

b. Prerequisites/Co-



Course Name/Course Code: **PROJECT MANAGEMENT (SYSINDE)**  
Credits and Contact Hours: 3 units (3-hour lecture)  
Instructor: Ronaldo Polancos

**Textbook and Online Resources:**

Schwalbe, K. (2014), Information Technology Project Management (7<sup>th</sup> edition). Cengage Learning Asia  
Pinto, J. (2012), Project Management: Achieving Competitive Advantage (3<sup>rd</sup> edition). Pearson International  
Bunin, R.B. (2012), New Perspectives on Microsoft® Project 2010: Introductory (1st Edition). Cengage Learning  
Avraham, S., Bard, J., Globerson, S. (2013), Project Management (2<sup>nd</sup> edition). Pearson International  
Gido, J., Clements, J. (2012), Successful Project Management (5<sup>th</sup> edition). Pearson International  
Project Management Book of Knowledge. <http://www.pmi.org/PMBOK-Guide>



**Brief List of Topics to be Covered:**

- Introduction to Project Management
- Scope Management
- Time Management
- Cost Management
- Earned Value Management
- Quality Management
- Risk Management
- Communication Management
- Resource Management
- Procurement Management

Course Name/Course Code: **Management Information System (SYSINFO)**  
Credits and Contact Hours: 3 units (3 hours lecture)

**Brief List of Topics to be Covered:**

- Introduction to Systems Analysis and Design
- Analyzing the Business Case
- Project Management
- Requirements Modeling
- Data and Process Modeling
- Process Management
- Object Modeling
- Output and User Interface Design
- Data Design
- Usability Testing

Course Name/Course Code: **Thesis 1 for IEs (THSIEE1)**  
Credits and Contact Hours: 1 unit  
Instructor: Dr. Charlle Sy

**Textbook and Online Resources:**

None

**Course Information:**

- a. Description - This course is the first in a series involving a three-term independent group study, guided by an adviser of their choice and who specializes in the field of their topic.
- b. Prerequisites/Co-requisites: PRCIEN1 (Hard Pre-requisite), MERESIE (Soft Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. The student will be able to define and select theoretical or applied engineering problems that could be solved using the concepts, principles, methods, and techniques of Industrial Engineering.
  2. The student will be able to identify opportunities, gaps and direction for improvement for the selected engineering problem
  3. The student will be able to select specific concepts, principles, methods, and techniques of Industrial Engineering that would address the identified opportunities, gaps and direction for improvement for the engineering problem
- b. Student outcomes  
SO-E: An ability to recognize, formulate, and solve engineering problems

**Brief List of Topics to be Covered:**

- Pure Research
  - Introduction/Background of the Study
  - Problem Definition and Objectives

- Applied Research
  - Company Profile / Background of the Study
  - Industry Profile / Review of Related Literature
  - System Framework and Scope
  - Situation Appraisal
  - Problem Statement and Objectives
  - Reference Documentation
  - Oral Communication
  - Defense of thesis

Course Name/Course Code: **Thesis 2 for IEs (THSIEE2)**  
Credits and Contact Hours: 1 unit  
Instructor: Dr. Charlle Sy

**Textbook and Online Resources:**

None

**Course Information:**

- a. Description - This course is the second in a series involving a three-term independent group study, guided by an adviser of their choice and who specializes in the field of their topic
- b. Prerequisites/Co-requisites: THSIEE1 (Hard Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. The student will be able to analyze the selected theoretical or applied engineering problems using the concepts, principles, methods, and techniques of Industrial Engineering.
  2. The student will be able to identify Industrial Engineering concepts, principles, methods, and techniques that will address the identified issues and concerns of the existing system or process
  - 3.



- Applied Research
  - Situation Appraisal
  - System Framework and Scope
  - Problem Statement and Objectives
  - Problem Analysis
  - Analysis of Initial Data or Initial Results
  - Alternative Solutions
  - Reference documentation

Course Name/Course Code: **Thesis 3 for IEs (THSIEE3)**  
Credits and Contact Hours: 1 unit  
Instructor: Dr. Charlle Sy

**Textbook and Online Resources:**

None

**Course Information:**

- a. Description - This course is the third in a series involving a three-term independent group study, guided by an adviser of their choice and who specializes in the field of their topic
- b. Prerequisites/Co-requisites: THSIEE2 (Hard Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. The student will be able to apply the concepts, principles, methods, and techniques of Industrial Engineering through a directed study.
  2. The student will be able to prepare a report that documents the generation of solutions for the identified problem.
  3. The student will be able to develop an implementation plan on how the solutions will be rolled out to the system understudy. The plan includes how the team intends the solution to be used and applied by the stakeholders.
  4. The student will be able to organize and work in a team: allocate resources, tasks, and responsibilities among team members independent of faculty intervention.
  - 5.

b. Student outcomes

SO-C. An ability to design, build, improve, and install systems or processes which are efficient, effective, as well as robust to meet desired needs within identified constraints.

SO-E. An ability to recognize, formulate, and solve engineering problems.

SO-G. An ability to effectively communicate orally and in writing using the English language

SO-H. An understanding of the effects of engineering solutions in a comprehensive context.

SO-F. Recognition of professional, social, and ethical responsibility.

**Brief List of Topics to be Covered:**

- Pure Research
  - Problem Definition and Objectives
  - Literature Review
  - Framework
  - Solution Methodology /Model Formulation
  - Analysis of Data/Results
  - Conclusions and Recommendations based on Initial Set of Solutions
  - Reference documentation
  - Oral Communication
  - Defense of thesis
  
- Applied Research

Course Name/Course Code: **Analytic Geometry (ANAGEOM)**  
Credits and Contact Hours: 2 units (2 hours lecture)  
Instructor:

**Textbook and Online Resources:**

Riddle, Douglas C. (2012). *Analytic Geometry*, 6th Ed. Thomson Brooks/Cole.

9. Determine the general form and standard forms of the equations of circle, parabola, ellipse, and hyperbola.
10. Solve problems on circles, parabola, ellipse and hyperbola determined by different conditions.
11. Draw neatly and accurately the graphs of circles, parabola, ellipse and hyperbola.
12. Identify the general classification and state the basic properties of the curves and approximate accurately the corresponding graphs of a given algebraic curves as well as polar curves.

b. Student outcomes

SO-A. An ability to apply knowledge of mathematics, physical sciences, engineering sciences to the practice of chemical engineering.

**Brief List of Topics to be Covered:**

- Introduction: Plane Analytic Geometry
- Line
- Circle
- Conic Sections
- Curve Sketching
- Polar Coordinates

Course Name/Course Code:       **General Chemistry 1 for COE and CCS  
(CHEMONE)**  
Credits and Contact Hours:       3 units (3 hours lecture)  
Instructor:

**Textbook and Online Resources:**

- Moore, J.W. and Stanitski, C.L. (2015) Chemistry the Molecular Science (5th edition)  
Brooks/Cole-Cengage Learning
- Chang, R. (2010) Chemistry, (10th International Edition), New York: McGraw-Hill.
- Kotz, J.C. and Treichel Jr, P.M., Weaver, G.C. (2012) Chemistry and Chemical Reactivity,  
(8th edition). Australia: Brooks/Cole-Cengage Learning.
- Masterton, W.L. and Hurley, C.N. (2008) Chemistry: Principle and Reactions, (6th  
edition). Canada: Brooks/Cole- Cengage Learning,
- Malone, L.J., Dolter, T.O. with Gentemann, S. (2013) Basic Chemistry (9th edition)  
Hoboken, NJ, Wiley.
- Petrucci, R.H. (2011) General Chemistry: Principles and Modern Applications, (10th  
edition) Toronto: Pearson Canada
- Silberberg, M.S. (2013) Principles of General Chemistry (3rd edition). New York:  
McGraw-Hill.
- Tro, N.J. with Neu, D. (2012) Chemistry in Focus: A Molecular View of our World, (5th  
edition). Australia: Brooks/Cole Cengage Learning.
- Zumdahl, S.S., and Zumdahl, S.A. (2012) Chemistry, An Atoms First Approach

**Brief List of Topics to be Covered:**

- Orientation
- Chemical Foundations
- Chemical Reactions
- Electron Configurations and the Periodic Table
- Covalent Bonding
- Molecular Structures
- Properties of Gases
- Liquids, Solids and Materials
- The Chemistry of Solutes and Solutions

Course Name/Course Code: **Differential Calculus (DIFFCAL)**  
Credits and Contact Hours: 4 units (4 hours lecture)  
Instructor:

### **Textbook and Online Resources:**

- Larson, R (2014). Calculus: An Applied Approach, Boston: Houghton Mifflin.  
Larson, R and Edwards, B (2014) Calculus. Boston, Massachusetts: Brooks/Cole, CENGAGE Learning.  
Stewart, J (2013). Essential Calculus: Early Transcendental, Boston, Massachusetts: Brooks/Cole, CENGAGE Learning.  
Smith, RT (2012). Calculus, Boston: McGraw Hill Higher Education.  
Stewart, J (2011). Stewart's Calculus Early Transcendentals. Philippine Edition, ISBN-13: 978-981- 4352-83-3.  
Hass, J (2009). University Calculus: Elements and Early Transcendentals. Boston: Pearson/Addison Wesley.  
Zill, DG (2009). A First Course in Differential Equations with Modeling Applications, CA: Brooks/Cole, CENGAGE Learning.  
Stewart, J (2008). Metric International Version Multi-Variable Calculus. Belmont, C. A.: Thomson Brooks/Cole.  
Brannan, JR and Boyce, WE (2007). Differential Equations: An Introduction to Modern Methods and Applications, NJ: John Wiley and Sons, Inc.

### **Course Information:**

- a. Description - This course (Differential Calculus - DIFFCAL) includes the basic concepts of calculus such as limits, continuity and differentiability of functions. It aims to develop in the students the skills of differentiation of both algebraic and transcendental functions involving one or more variables. Applications of differential calculus to problems on optimization, rates of change, related rates, tangent and normal lines, and approximations are also discussed. It also includes partial differentiation and transcendental curve tracing specifically logarithmic and exponential functions.
- b. Prerequisites/Co-requisites: ANAGEOM (Co-requisite), ENGCAL1 (Equivalent), ENGALG1 (Hard Pre-requisite), ENGTRIG (Hard Pre-requisite)
- c. Required course

### **Specific Goals for the Course:**

- a. Specific outcomes
  1. Explain the basic concepts of functions and their limits, and continuous/discontinuous functions.
  2. Define derivatives as a slope of the tangent line and as an instantaneous rate of change.
  3. Differentiate algebraic and transcendental functions with ease.



4. Apply the concept of derivative in the slope of the tangent/normal lines, and find the equation of the tangent/normal lines to a curve.
5. Extend the concept of rate of change to related rates.
6. Apply the concept of differentials to approximations and error problems
7. Define the critical points and points of inflections, and classify the critical point using the first-derivative and second-derivative concepts.
8. Relate the concept of maxima minima to real technical problems.
9. Identify the different indeterminate forms and apply L'Hospital's Rule in evaluating the limit of a function.
10. Analyze and trace correctly the transcendental functions.
11. Perform first-order and higher-order partial derivatives.
12. Apply total differentials to approximation problems.
13. Perform partial differentiation using chain rule.

b. Student outcomes

SO-A. An ability to apply knowledge of mathematics, physical sciences, engineering sciences to the practice of chemical engineering.

**Brief List of Topics to be Covered:**

- Recall the concepts/theories and techniques learned from Algebra and Trigonometry
- Define derivatives as a slope of the tangent line and as an instantaneous rate of change
- Identify the correct derivative formulas to both algebraic and transcendental functions
- Differentiate the slope of the tangent line from that of the normal line.
- Extend the concept of rate of change to related rates.
- Distinguish the derivative from differentials
- Define the critical points and points of inflections
- Solve optimization problems.
- Identify the different indeterminate forms.
- Follow the steps in tracing transcendental functions.
- Define functions with several independent variables.
- Explain total differentials
- Perform partial differentiation using chain rule.
- Perform partial derivatives given implicit functions.



7.

Course Name/Course Code: **Electrical Engineering Principles (ELENPRI)**



Course Name/Course Code: **College Algebra for Engineering (ENGALG1)**  
Credits and Contact Hours: 3 units (3 hours lecture)  
Instructor:

**Textbook and Online Resources:**

Young (2015). Algebra and Trigonometry with WileyPLUS Set. Wiley Custom Edition  
3ed. ,NJ: John Wiley and Sons, Inc.

Gustafson, R.D., Hughes, J.D. (2013). College Algebra, Australia : Brooks/Cole Cengage.

Larson, R., Hostetler R.P. (2012). Algebra and Trigonometry, 8th Edition. Cengage  
Learning Asia Pte Ltd.

- b. Student outcomes  
SO-A.

Course Name/Course Code: **Advanced Algebra for Engineering (ENGALG2)**  
Credits and Contact Hours: 2 units (2 hours lecture)



6. Develop skills in the fundamental principles of counting, permutations, combinations and the binomial theorem and be able to apply them in solving problems.
  7. Apply analytical solutions to solve problems correctly within specified time limit.
  8. Develop a sense of responsibility and academic honesty in fulfilling assigned tasks.
  9. Develop inter-personal skills in exchanging ideas with confidence and work harmoniously with other students in the class.
- b. Student outcomes
- SO-A. An ability to apply knowledge of mathematics, physical, life and information

Course Name/Course Code:     **Differential Equations (ENGIANA)**  
Credits and Contact Hours:     3 units (3 hours lecture)  
Instructor:

**Textbook and Online Resources:**

Zill, D. G., Wright, W. S. and Cullen, M. R. (2013). Differential Equations with Boundary-Value Problems, 8th Edition, International Edition. China: Brooks/Cole, CengageLearning. (Note: states only D. G. Zill and W. S. Wright on cover and preface.)

Ayres, Frank. Jr. Theory and Problems of Differential Equation. Schaum's Outline Series.

Brannan, J. R. and Boyce, W. E. (2007).

6. Utilize differential equations and their solutions to applications discussed in, but not limited to, those covered in class
7. Discern, critique and interpret obtained solutions to differential equations
8. Practice the value of honesty and responsibility in fulfilling assigned tasks
9. Work with a small team to formulate and solve a problem involving applications of differential equations and present the solution in a short video

b. Student outcomes

SO-A. An ability to apply knowledge of mathematics, physical, life and information sciences; and engineering sciences appropriate to the field of practice.

**Brief List of Topics to be Covered:**

- Introduction / Definition
- Solution of some 1st order DE
- Introduction to Use of Computer in Solving Differential Equations
- Application of 1st Order Differential Equations
- Linear Differential Equation of Order
- Laplace Transforms of Functions
- The Heaviside Unit-Step Function
- Application of Laplace Transforms(Problems on Vibration)
- Solution of Systems of Linear Differential Equation with Initial Values / Simultaneous Solution to DE (Laplace Transform Method)



**Brief List of Topics to be Covered:**

- Orientation
- Introduction to Academic Reading and Academic Writing
- Basic Reading Skills
- Advanced Reading Skills
- Fundamentals of Writing
- Note-taking Skills
- Organizing a paragraph/an Essay
- Extended Definition
- Argumentative / Problem-Solution Essay
-

Course Name/Course Code: **English for Research (ENGLRES)**  
Credits and Contact Hours: 3 units (3 hours lecture)  
Instructor:

**Textbook and Online Resources:**

American Psychological Association [APA]. (2013). APA style. Retrieved  
[www.apastyle.org](http://www.apastyle.org)

Arkin, M. & Macheski, C. (2006). Research papers: A guide and workbook. Boston, MA:  
Houghton Mifflin.

Hervas, L.C. (2005). Writing a research paper the right way: With easy-to-follow

8. Address identified problems/issue in the community/respective fields by writing a research paper.
9. Work on topics that are related to one's field in order to improve oneself for the progress of community/society.
10. Upgrade the research output for a larger research project that may involve other people in the same field or expertise

b. Student outcomes

SO-E. An ability to recognize, formulate, and solve problems

SO-G. An ability to effectively communicate orally and in writing using the English language

**Brief List of Topics to be Covered:**

- Syllabus and Course Introduction
- Research topics
- Sources
- Annotated bibliography
- Thesis statement and Outline
- Survey / Interview / Non-prose
- Direct quotes, paraphrasing and summarizing
- Note-taking and in-text citation
- Research paper draft
- Introduction, conclusion, title, format
- Final Paper





**Brief List of Topics to be Covered:**

- Vectors
- Kinematics
- Dynamics
- Work, Energy and Power
- Impulse and Momentum
- Rotation
- Dynamics of Rotation
- Fluids
-



2. Interpret and explain the solutions in a clear and organized manner.



4. Verify and apply analytical

Course Name/Course Code: **Pagbasa at Pagsulat sa Ibat-ibang Disiplina (FILDAR)**  
Credits and Contact Hours: 3 units (3 hours lecture)  
Instructor:

**Textbook and Online Resources:**

- Batnag, Aurora at Lilia Antonio. *Pagsasalin: Teorya at Praktika*. Quezon City: C&E Publishing, Inc. 2009. Print
- Sibayan, Bonifacio P. *The Intellectualization of Filipino and Other Essays on Education and Sociolinguistics*. Manila: De La Salle University Press Inc. 2003. Print.
- Constantino, Pamela C. “*Mga Babasahin sa Varayti at Varyasyon na Filipino*.” Minanga. Quezon City: University of the Philippines Press, 2003. Print.
- Malay. “Muling Pagtingin sa Ortograpiyang Filipino: Karanasang DLSU.” Malay. Tomo 22, Bilang 1 (2009): 45-49. Print.
- Paz, Vina P. “*Ang Pang-akademiyang Varayti ng Wika sa Pilipinas*” Minanga. Quezon City, University of the Philippines Press, 2003. Print.
- Santos, Benilda S. *Ang Wikang Filipino sa Loob at Labas ng Akademya’t Bansa (Unang Sourcebook ng SANGFIL)*. Diliman, Quezon City, University of the Philippines Press. 2003. Print.
- Sison-Buban, Raquel E. “Saling Abueg: Ang Pagtatagpo ng Ideya at Praktika ng Pagsasalin.” Malay. Tomo 24, Bilang 1 (2011): 93-103. Print.
- Tullao, Tereso S. “*Ekonomiks sa Diwang Pilipino: Halo-Halo, Tingi-Tingi at Sari-Sari*.” Malay. Tomo 22, Bilang 1 (2009): 101-112. Print.
- Zafra, Galileo. Ed. *Mga teksto mula sa Salin-suri: Panimulang Pagmamapa ng mga Larangan ng Pag-aaral ng Pagsasalin sa Filipinas (Ikatlong Sourcebook ng SANGFIL)*. Diliman, Quezon City, University of the Philippines Press. 2009. Print.
- Africa, Sonny. “Ang EDSA at ang Ekonomya: 25 taon pagkalipas.” IBON Features. 2011. Web. 23 May 2011.< [http://www.ibon.org/ibon\\_features.php?id=134](http://www.ibon.org/ibon_features.php?id=134)>
- De La Salle University. “Natatanging Isyu sa Wika.” Malay 22.1 (2009). Web. 23 May 2011.<<http://www.philjol.info/philjol/index.php/MALAY>>
- Masakayan, Nicolo. “Ilang mga Hamon sa Pamilyang Filipino sa Panahon ng Internet.” Malay 23.1 (2010). Web. 23 May 2011. <<http://www.ejournals.ph/index.php?journal=malay&page=article&op=view&path%5B%5D=1577>>
- San Juan, David Michael. “Multilingwalismo: Salbabida ng Wikang Filipino at Mga Dayalekto, Bagong Kahingian ng Globalisadong Mundo.” 2008. Web. 23 May 2011. <<http://www.scribd.com/doc/56032425>>

**Course Information:**

- a. Description - Ang kursong FILDAR (Filipino: Pagbasa at Pagsulat sa Iba’t Ibang Disiplina at Larangan) ay nakapokus sa paglinang ng mga kasanayan sa analitikal at

panlipunan at komunikasyon, at agham at teknolohiya, at propesyon. Magsisilbing modelo ang mga babasahin sa pagsulat ng mga iskolarling sanaysay at riserts.

- b. Prerequisites/Co-requisites: FILPI2 (Equivalent) FILKOMU (Hard Pre-requisite)
- c. Required course

### **Specific Goals for the Course:**

- a. Specific outcomes
  1. Nakapagsasalin ng mga makabuluhang texto sa iba't ibang larangan mula Ingles tungong Filipino bilang ambag sa intelektwalisasyon ng wikang pambansa.
  2. Nakasusulat ng iskolarli at masining na sulatin o nakalilikha ng video research sa iba't ibang disiplina na nagsasaalang-alang ng wastong gamit ng wika, kritikal at malikhaing pag-iisip, na nag-aambag sa pagbuo ng isang intelektwalisadong wikang Filipino.
- b. Student outcomes
  - SO-E. An ability to recognize, formulate, and solve problems
  - SO-G. An ability to effectively communicate orally and in writing using the Filipino language

### **Brief List of Topics to be Covered:**

- Fundasyon ng pagpapahayag- akademik
- Wika at ang Wika sa Akademya “Ang Wikang Filipino sa Akademya”
- Intelektwalisasyon ng Filipino
- Pagsasalin at Pagpapayaman ng *Register*
- Pagbuo ng Riserts /Term Paper para sa Larangan / Disiplina
- Ang Documentary Films Bilang Riserts
- Pagpapayaman ng Bokabularyo sa mga Disiplina
- Pagsasalin: Simulain, Proseso, Kritiking ng Pagsasalin, at Worksyap
- Imersyon sa Disiplinang Inhenyeriya
- Imersyon sa Ekonomiks
- Imersyon sa Agham Panlipunan
- Presentasyon ng Riserts







Course Name/Course Code:

- Benefits of cardio exercise
- Set personal fitness goals
- Practical: Warm-up / Exercises/ Ab workout
- Review: Analyze Phases of Dance Aerobic Routine
- Plan and create dance aero routine

Course Name/Course Code: **FITNESS and WELLNES IN DANCE – Social Ballroom Dancing/Latin Dance Sport Dancing (FTDANCE)**

Credits and Contact Hours: 2 units (2 hours lecture)

Instructor:

**Textbook and Online Resources:**

- Atlas, R. What is Swing ? Retrieved November 5, 2011 from <http://syrswingdance.org/swing.html>
- Cirio, Ed Origin of Swing Dance Retrieved November 5, 2011 from <http://syrswingdance.org/swing.html>
- Clippinger, K. (2007). *Dance Anatomy and Kinesiology: Principles and Exercise for improving Technique and Avoiding Common Injuries*. Illinois: Human Kinetics.
- Du Beke, A. (2007). *Anton’s Dance Class*. London: Kyle Cathie Limited.
- Eijkhout, V. 9.1 On How To Dress For Dancing Etiquette Retrieved November 5, 2011, from [http://eijkhout.net/lead\\_follow/dress.html](http://eijkhout.net/lead_follow/dress.html)
- George, C. (2008) *Ballroom dancing – Study and teaching*, Ballroom dancing. <http://www.cydeas.com/dance/etiquette/>
- Jimena, E. (2006). *Dance Your Way to Fitness*. Phil. Rex Printing Company Inc.
- Kassing, G. and Jay, D. (2003). *Dance Teaching Methods and Curriculum Design: Comprehensive K-12 Dance Education*. US: Human Kinetics.
- Kim, Jean (2006) “Simple Rules in Ballroom Dance Etiquette”
- Kim,J. Simple Rules of Ballroom Dance Etiquette Retrieved November 5, 2011, from
- King, G. (2007) *Ballroom dancing – Study and teaching*, Dance Technique. United States.
- NASPE (2005). *P.E. for lifelong Fitness: The Physical and Recreational Teachers Guide 2<sup>nd</sup> ed.* US: Human Kinetics.
- Nosratinia, A. *Beyond Dance Etiquette: Success and Enjoyment in Social Dancing* Retrieved November 5, 2011, from <http://www.utdallas.edu/~aria/dance/beyond.html>
- Stanley, A. (2006). *Ballroom Bible: Learn the Art to ballroom dancing*.

## **Specific Goals for the Course:**

- a. Specific outcomes
  1. Perform ballroom dance routines and creatively combine variations with rhythm, coordination, correct footwork technique, hold / frame, facial and body expression.

Course Name/Course Code: **Fitness and Wellness in Dual Sport – BADMINTON (FTSPORT)**  
Credits and Contact Hours: 2 units (2 hours lecture)  
Instructor:

**Textbook and Online Resources:**

- Grice, Tony. 2008. *Badminton: steps to success* 2nd ed, Champaign, IL: Human Kinetics. ISBN-0736072292 b
- Bloss, Margaret V 2001. *Badminton* 8th ed. Boston: McGraw-Hill. ISBN-0697345343
- Badminton Information. (2012). *The History of Badminton*. Retrieved May 30, 2014 from <http://www.badminton-information.com/history-of-badminton.html>
- The Badminton Bible. (n.d.). *Badminton footwork*. Retrieved May 30, 2014 from <http://www.badmintonbible.com/articles/footwork/>
- ISport Badminton. (n.d.). *Guide to Badminton Footwork*. Retrieved May 30, 2014 from <http://badminton.isport.com/badminton-guides/guide-to->

5. Understand and appreciate the athletic requirements, rule and regulations of the badminton and etiquette during the game both recreational and the competitive aspect.
6. Apply discipline-specific scientific and theoretical concepts critical to the development of effective offensive and defensive playing game strategies and techniques, during the actual game and interclass tournament.
7. Adhere to the values of the physical activities towards a healthy lifestyle and strictly observe safety performance while actively participating in badminton drills/activities to become a well informed and an engaged badminton player.
8. Strengthen awareness of teamwork, sportsmanship, camaraderie, animate fair play and suggest appropriate competitive behaviour, at all times in any activities, respect for game officials during scrimmages and intra/interclass tournament.
9. Participate and support all badminton related activities/fitness advocacies including worthwhile community projects determined by the department/college.

b. Student outcomes

SO-G. An ability to effectively communicate orally and in writing using the English language

**Brief List of Topics to be Covered:**

- Introduction to brief history, skill related fitness, laws of the game and the fundamentals of badminton
- Familiarisation activities and initial assessment of abilities relevant for badminton including grips, hand – eye coordination, footwork, and movement abilities related to badminton as a game official during the inter/intra – class.
- Individual Ball balancing, By partner Ball retrieving, introduction to overhead strokes, underhand strokes, foot works, (six side of shadow play).
- High serve, low – serve and basic footwork to rear court and overhead clear.
- Over-Head Drop, basic footwork (front and back side of the court), and holding the shuttle.
- Cross-court net shot, underhand clear, and proper holding of the shuttle.
- Drive shot, smash, and half smash

Course Name/Course Code: **Fitness and Wellness in Team Sports-Floorball (FTTEAMS)**  
Credits and Contact Hours: 2 units (2 hours lecture)  
Instructor: Ralph Andrew Ramos

**Textbook and Online Resources:**

- International Floorball Federation, Rules and Competition Committee (2014). *The International Floorball Federation: Rules of the Game*. Solna, Sweden: International Floorball Federation.
- Paavilainen, A. (2007). *Individual Technique and Tactics: Teaching Individual Technique and Tactics in Floorball; Instructions and Drills*. Helsinki: International Floorball Federation.
- Paavilainen, A. (2007). *Team Tactics: Teaching Team Tactics in Floorball; Instruction and Drills*. Helsinki: International Floorball Federation.
- Paavilainen, A., Koh, E., Bruun, M., & Liljelund, J. (n.d.). *Floorball: Learn, Start, Play*. Helsinki: International Floorball Federation.

**Course Information:**

- a. Description - Fitness and Wellness in Floorball (FITEAMS) is a basic module that encourages the students to engage in Floorball as a fitness activity by performing the necessary fundamental skills, understanding the history and rules of the sport, applying different techniques and tactics, and developing game awareness of the sport.
- b. Prerequisites/Co-requisites: FWTEAMS (Equivalent), FITWELL (Soft Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. To demonstrate the basic skills in Floorball such as passing, receiving, shooting, and



7. To display appropriate competitive behavior while adhering to fair play during class activities such as drills, exercises, practice and actual matches, including respecting game officials and participation and support for Floorball related activities/fitness advocacy determined by the Department/College.
- b. Student outcomes
- SO-G. An ability to effectively communicate orally and in writing using the English language

**Brief List of Topics to be Covered:**

- Introduction to Floorball
- Floorball rules
- Review of basic passing
- Review of basic shooting
- Advanced dribbling techniques
- Review of dribbling techniques
- Review of Offensive techniques and tactics
- Mid-term Exam
- Formation of teams
- Floorball intraclass tournament
- Culminating activity (Floorball interclass/invitational)

Course Name/Course Code:     **Engineering Graphics 1 (GRAPONE)**  
Credits and Contact Hours:     1 unit (1 hour lecture)  
Instructor:

**Textbook and Online Resources:**

Madsen, D. *Engineering Drawing & Design*. Delmar Cengage Learning, 2011. Print.  
Bethune, J. *Engineering graphics with AutoCAD 2008*. Upper Saddle River, N.J.:  
    Pearson/Prentice Hall, c2008.  
Lamit, and Kathleen Kitto. *Engineering graphics and design : with graphical analysis*.  
    Minnneapolis : West Pub., c1997.



Course Name/Course Code: **The Great Works (GREATWK)**  
Credits and Contact Hours: 3 units (3 hours lecture)  
Instructor:

**Textbook and Online Resources:**

Velarde, E. (2014, September 22). *Screenwriter Ricky Lee lived 3 lives in detention*. Retrieved from [newsinfo.inquirer.net/639739/screenwriter-ricky-lee-lived-3-lives-in-detention](http://newsinfo.inquirer.net/639739/screenwriter-ricky-lee-lived-3-lives-in-detention)

Lee, Ricky. *Si Tatang at mga Himala ng Ating Panahon*. Writers Studio Publishing, Inc., 1988. 138, 139-146, 94-137. Print.

Childs, P. and Williams R.J. *An Introduction to Post-Colonial Theory*. Prentice Hall, 1997. Print.

Center for Art and Thought. (2013).



Course Name/Course Code: **Introduction to Art (HUMAART)**  
Credits and Contact Hours: 3 units (3 hours lecture)  
Instructor: Clarissa V. Militante

**Textbook and Online Resources:**

Gompertz, Will. WHAT ARE YOU LOOKING AT? The Surprising, Shocking, and Sometimes Strange Story of 150 Years of Modern Art. Penguin Group (USA); 2012

Harrison, Charles & Wood, Paul (editors). ART in THEORY 1900-1990 An Anthology of

Changing Ideas. Blackwell Publishers, MassacSurIQ q ((07 Tm/TT1 ( ) Tj ET Q q 0.24 0 0 0.24 9.01



b. Student outcomes

SO-E. An ability to recognize, formulate, and solve problems  
SO-



Course Name/Course Code: **Fundamentals of Materials Science and Engineering  
(IMEMATS)**

Credits and Contact Hours:

6.

Course Name/Course Code: **Integral Calculus (INTECAL)**  
Credits and Contact Hours: 4 units (4 hours lecture)  
Instructor:

**Textbook and Online Resources:**

- Stewart, James (2011). Stewart's Calculus Early Transcendentals. Philippine Edition, ISBN-13: 978-981-4352-83-3.
- Stewart, J. (2013). Essential Calculus: Early Transcendental. Brooks/Cole Cengage Learning
- Hass, J. (2009). University Calculus: Elements and Early Transcendental. Boston: Pearson/Addison Wesley.
- Larson, R. (2014). Calculus: An Applied Approach. Boston: Houghton Mifflin
- Larson, R. Edwards B. (2014 ) Calculus Boston, Massachusetts : Brooks/Cole, Cengage Learning
- Zill, D. G. (2009). A First Course in Differential Equations with Modeling Applications, CA: Brooks/Cole, Cengage Learning.
- Stewart, J. (2008). Metric International Version Multi-Variable Calculus. Belmont, C. A.: Thomson Brooks/Cole.
- Smith, R. T. (2012). Calculus. Boston: McGraw Hill Higher Education.
- Brannan, J. R. and Boyce, W. E. (2007). Differential Equations: An Introduction to Modern Methods and Applications, NJ: John Wiley and Sons, Inc.
- Leithold, L. (1996). The Calculus ,New York: HarperCollins Publishers Inc.
- Edwards,C., Penney, D. (1994). Calculus with Analytic Geometry, 4th Edition, New Jersey: Prentice-Hall, Inc.
- Purcell, E., Varberg, D. (1984). Calculus with Analytic Geometry, 4th Edition, New Jersey: Prentice-Hall, Inc.

**Course Information:**

- a. Description - This course (INTECAL - INTEGRAL CALCULUS)introduces the concept of integration and its application to some physical problems such as evaluation of areas, volumes of revolution, force, and work. The fundamental formulas and various techniques of integration are taken up and applied to both single variable and multi-variable functions. The course also includes tracing of functions of two variables for a better appreciation of the interpretation of the double and triple integral as volume of a three-dimensional region bounded by two or more surfaces.
- b. Prerequisites/Co-requisites: DIFFCAL (Hard Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. Explain the basic concepts

3. Identify the different Improper Integrals.
4. Correctly apply the concept of integration in solving plane areas and areas between curves.
- 5.

Course Name/Course Code: **Buhay, Nagawa at Sinulat ni Dr. Jose Rizal (KASPIL1)**  
Credits and Contact Hours: 3 units (3 hours lecture)  
Instructor:

**Textbook and Online Resources:**

- De Viana, Augusto V. 2011. Dr. Jose Rizal: social reformer and his patriot. Manila: Rex Book Store.
- Habulan, Ani. (Ed.). 2011. The Anvil Jose Reader on the occasion of the sesquicentennial of his birth (1861-2000). Manila: Anvil Pub.
- Ocampo, Nilo. 2011. Kristong Pilipino: Pananampalataya kay Jose Rizal. QC: Bagong Kasaysayan.
- Perdon, Renato. 2011. Understanding Jose Rizal. N.S.W. : Manila Prints.
- Rizal, Jose. 2006. Noli Me Tangere. Trans. by Leon Ma. Guerrero. N.P.: Guerrero Pub.
- Rizal, Jose. 2006. El Filibusterismo. Trans. by Leon Ma. Guerrero. N.P.: Guerrero Pub.
- Valdez, Maria Stella. 2007. Dr. Jose Rizal and the writing of history. Manila: Rex Book Store.
- The Complete Jose Rizal - Filipinia NET Collection. Retrieved May 14, 2010, from <http://www.filipiniana.net/microsite/cjr/index.jsp>. Isang online site na nagtatampok ng mga materyales hinggil kay Jose Rizal.
- “An Excerpt from Elizabeth Medina's Annotated Translation of W.E. Retana's 1907 Biography of José Rizal.” Retrieved May 4, 2011, from [www.univie.ac.at/Voelkerkunde/apsis/aufi/rizal/retana2.htm](http://www.univie.ac.at/Voelkerkunde/apsis/aufi/rizal/retana2.htm). Isang online site hinggil sa halaw mula sa sinudlingang salin ng talambuhay ni Retana.
- Harrison, Francis Burton. “Rizal as a Patriot, Author, and Scientist.” Retrieved May 4, 2011 from <http://classicwebarchive.org/web20040620135109/http://www.univie.ac.at/Voelk>

**Course Information:**

- a. Description - Ang KASPILI1 ay isang foundational course. Ang kritikal na pag-aaral at pagsusuri sa buhay, mga akda at mga nagawa ni Dr. Jose Rizal ay isang pagsusuring



### **Specific Goals for the Course:**

- a. Specific outcomes
  1. Malawak, malalim at mapanuri na pag-unawa na ang kasalukuyang kalagayan ng at kaganapan sa bansa ay may malalim na pinag-uugatan sa ating kasaysayan.
  2. Pagkatanto na ang mga problemang hinaharap ng bansa sa kasalukuyan ay malaon nang kinabaka ng mga naunang henerasyon; at mula sa aral ng nakaraan ay makapaglalatag ng karampatang solusyon o panukala upang tugunan ang naturang suliranin.
- b. Student outcomes

SO-G. An ability to effectively communicate orally and in writing using the Filipino language

### **Brief List of Topics to be Covered:**

- Ang Disiplina ng Kasaysayan
- Prehistoria at Sinaunang Kabihasan
- Hamon ng Kolonyalismo at Tugon ng Mamamayang Pilipino
- Hamon ng Kalayaan at Pagsasarili



Course Name/Course Code: **General Chemistry Laboratory 1 for Engineering (LBYCH11)**  
Credits and Contact Hours: 1 unit (1 hour lecture)  
Instructor:

**Textbook and Online Resources:**

**Brief List of Topics to be Covered:**

- Safety in the Laboratory
- Quantitative Measurements and Significant Figures
- Chemical Formulas
- Chemical Reactions and Equations
- Quantitative Measurements and Significant Figures
- Lewis Structures
- Liquids
- Stoichiometry
- Solutions

Course Name/Course Code: **Computer Fundamentals and Programming 1 (LBYEC71)**  
Credits and Contact Hours: 1 unit (1 hour lecture)  
Instructor:

**Textbook and Online Resources:**

- Hanly, J., & Koffman, E. (1995). C program design for engineers. Reading, Mass.: Addison-Wesley Pub.
- Schildt, H. (2003). C/C programmer's reference (3rd ed.). New York: McGraw-Hill/Osborne.
- Ritchie, D., Kernighan, B., & Laboratories, I. (2015). The C programming language (2<sup>nd</sup> ed). Murray Hill, N.J.: Bell Laboratories.
- Borland, T. (1990). Turbo C++ Reference and User's Manuals. Scotts Valley, Calif.: Borland International.
- Kelley, A., & Pohl, I. (1987). C by dissection: The essentials of C programming. Menlo Park, Calif.: Benjamin/Cummings Pub
- Reddy, R., & Ziegler, C. (2010). C programming for scientists and engineers with applications. Sudbury, Mass.: Jones and Bartlett.
- Dey, K., & Bandyopadhyay, S. (2010). C programming essentials. Delhi India: Pearson.
- Balagurusamy, E. (2011). Programming in ANSI C (5th ed.). New Delhi: Tata McGraw Hill Education.
- Mittal, A. (2010). Programming in C. New Delhi, India: Dorling Kindersley (India).  
<http://www.cprogramming.com/tutorial/c-tutorial.html>  
<https://fresh2refresh.com/c-tutorial-for-beginners/>  
<http://www.tutorialspoint.com/cprogramming/>  
<http://www.cprogramming.com/tutorial.html>

**Course Information:**

- a. Description - This is an introductory course to computer software and computer technology. It covers topics on office productivity, web-authoring and engineering problem-solving methodology. The students will have hands-on experience in applying the concepts discussed in the course to engineering applications. In this course, students are also introduced to algorithm development in preparation for more advanced computer programming courses.
- b. Prerequisites/Co-requisites: ENGALG1 (Soft Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. Identify the fundamental processes involved in computing and familiarize themselves with various computer software tools.

2. Apply the use of office productivity, web-authoring and problem-solving methodology to practical and engineering applications.
3. Design, compile, test, run, and implement C language program
4. Show good resourcefulness by providing alternative solutions to varied problems on programming in varied real life situations
5. Develop troubleshooting skills in implementing C-language program.

b. Student outcomes

SO-A. An ability to apply knowledge of mathematics, physical, life and information sciences; and engineering sciences appropriate to the field of practice.

**Brief List of Topics to be Covered:**

- Word Processing and Excel
- Web-Authoring using HTML
- Engineering Problem
- Introduction to C Programming and Basic Input / Output
- Selective Structure (Conditional Statements)
- Repetition & loop Structure (Iterative Statements and Series Generation)
- Programming Engineering Applications in C using Modular Programming
- One Dimensional

Course Name/Course Code: **Computer Fundamentals Programming 2 (LBYEC72)**  
Credits and Contact Hours: 1 unit (1 hour lecture)  
Instructor:

### **Textbook and Online Resources:**

- Mohan, P. (2010). Fundamentals of information technology (Rev. ed.). Mumbai India: Himalaya Pub. House.
- Ritchie, D., Kernighan, B., & Laboratories, I. (2015). The C programming language (2<sup>nd</sup> ed). Murray Hill, N.J.: Bell Laboratories.
- Reddy, R., & Ziegler, C. (2010). C programming for scientists and engineers with applications. Sudbury, Mass.: Jones and Bartlett.
- Dey, K., & Bandyopadhyay, S. (2010). C programming essentials. Delhi [India: Pearson.
- Chhabra, J. (2010). C programming concepts: With problems and solutions. New Delhi: Tata McGraw-Hill.
- Balagurusamy, E. (2011). Programming in ANSI C (5th ed.). New Delhi: Tata McGraw Hill Education.
- King, K. (2011). C Programming: A Modern Approach
- Kochan, S. (2004). Programming in C (3<sup>rd</sup> ed.) .
- Stroustrup, B. (2014). Programming: Principles and Practice Using C++.
- LBYEC72 Lab Manual
- <http://www.programmingsimplified.com/>
- <http://www.c4learn.com/>

### **Course Information:**

- a. Description - This course introduces the conceptual aspects of problem solving, algorithm design and the nature of data incorporated with the more specific and implementation-directed aspects of programming syntax and constructs of C programming. The course also presents the development of algorithms and the application of C programming in engineering problem solving, The importance of developing reliable, robust and maintainable solutions is emphasized throughout.
- b. Prerequisites/Co-requisites: LBYEC71 (Hard Pre-requisite)
- c. Required course

### **Specific Goals for the Course:**

- a. Specific outcomes
  1. Apply knowledge of computing and mathematics appropriate to the discipline; specifically to include the application of mathematics, science and engineering to solve and reason about computational problems
  2. Analyze a problem, and identify and define the computing requirements appropriate to its solution
  3. Apply mathematical foundations and computer science theory, in particular principles of algorithmic design and complexity analysis
  4. Design, compile, test, run implement C Language program

b. Student outcomes

SO-I. An ability to engage in life-long learning and an understanding of the need to keep current of the developments in the specific field of specialization

**Brief List of Topics to be Covered:**

- Problem solving process.
- Flowcharting

Course Name/Course Code: **Electric Circuits I Laboratory for non-ECE  
(LBYEC74)**  
Credits and Contact Hours: 1 unit (1 hour lecture)  
Instructor:

**Textbook and Online Resources:**

Guitierrez. M. *Laboratory Manual in Electric Circuits I*. De La Salle University Press,  
1996. Print.  
<http://oc>

9. Confirm the Superposition Theorem by measuring the individual contribution of each source in a multiple source DC circuit. To sum these contributions and compare it to the measured total effect.
- 10.





- Introduction to AutoCAD software
-



2. Analyze and explain the relationship between the experimental variables and formulate appropriate generalizations.
3. Manifest intellectual honesty, patience, perseverance, self-discipline, critical and logical thinking, industry and creativity in performing each experiment. Work harmoniously and productively with others. Practice proper handling of equipment and safety rules in the laboratory.

b. Student outcomes

SO-A. An ability to apply knowledge of mathematics, physical, life and information sciences; and engineering sciences appropriate to the field of practice.

**Brief List of Topics to be Covered:**

- Significant Figures
- Errors and Uncertainty of Measurements
- Graphs and Equations
- Uniform Acceleration
- Composition of Concurrent Forces
- Newton's Second Law
- Work-Energy Theorem and Conservation of Energy
- Conservation of Linear Momentum and Torque
- Specific Heat of Solids
- Coefficient of Linear Expansion and Heat of Fusion
- Centripetal Force
- Projectile Motion
- Coefficient of Friction
- Specific Gravity
- Mechanical Equivalent of Heat
- Individual hands-on experiment
- Individual written report

Course Name/Course Code: **Physics Laboratory 2 (LBYPH12)**  
Credits and Contact Hours: 1 unit (1 hour lecture)  
Instructor:

**Textbook and Online Resources:**

Physics laboratory 2 (compiled experiments in heat, electricity & magnetism and optics) <http://www.dlsu.edu.ph/academics/colleges/cos/physics/experiments.asp>  
Young, H. and Freedman, R. (2016). University physics (14th edition). New York: Addison- Wesley Publishing Company  
Halliday, D., Resnick, R: and Walker J. (2014). Fundamentals of physics (10th edition). New York: John Wiley and Sons.  
Serway, R. and Jewett, J. (2014), *Physics for scientists and engineers with modern physics (9th edition)*. Chicago: Saunders College Publishing.  
Cutnell, J., Johnson, K., Young, D. and Stadler, S. (2015). Physics (10th edition) Wiley and Sons.  
Giambattista, A., Richardson, B. and Richardson, R. (2016). Physics (3rd Edition) McGraw Hill.  
Physlet physics: interactive illustrations, explorations, and problems for introductory physics" by Christian, Wolfgang. Upper Saddle River, N.J.: Prentice Hall, Pearson Education, c2004. Location: Circulation, 3rdFlr. QC30 .C47 2004; CD02355  
<http://ivle.dlsu.edu.ph/workspace/default.asp>  
[www.phet.colorado.edu](http://www.phet.colorado.edu)  
<http://webphysics.davidson.edu/applets/applets.html>  
<http://physics.bu.edu/~duffy/classroom.html>  
<https://ocw.mit.edu/courses/find-bytopic/#cat=science&subcat=physics>

**Course Information:**

- a. Description - This course complements the lecture courses on PHYSICS 2 for engineering, science and computer studies students. It covers activities to further develop basic laboratory skills initially practiced in PHYSICS LABORATORY 1. Selected experiments in electricity and magnetism, waves and optics will be performed.
- b. Prerequisites/Co-requisites: ENGPHY2 (Co-requisite), LBYPHY2 (Equivalent), LBYPH11 (Hard Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. Measure accurately and apply the physical la 0 0 0] TJ Em /TT11 Tf [ (S) -4Spel ur to furto ( )ur

3. Manifest intellectual honesty and self-discipline in preparing reports.
4. Volunteer and share the knowledge in physics for the under-privileged.

b. Student outcomes

SO-A. An ability to apply knowledge of mathematics, physical, life and information sciences; and engineering sciences appropriate to the field of practice.

**Brief List of Topics to be Covered:**

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Course Name/Course Code: **Mechanics of Deformable Bodies (MEDEFOR)**





Course Name/Course Code: **Personal Effectiveness Foundation (PERSEF 1)**  
Credits and Contact Hours: 2 units (2 hours lecture)  
Instructor:

**Textbook and Online Resources:**

Various self-assessment surveys and online resources will be used for each of the modules.

**Course Information:**

- a. Description - The Lasallian Core Curriculum of the DLSU–Manila aims at developing a whole person who embodies the Lasallian values and demonstrates professional skills as well as personal competencies. This individual is mature in all aspects of his/her person, with a nationalistic and humanistic outlook and a carefully reasoned faith.

PERSEF1 is a foundational course in the Lasallian Core Curriculum, taken by all students in their first year. It provides the information and skills that they need as they blend into college life. The course covers basic topics in each of the 5 themes of total personal development, designed to complement thei

**Brief List of Topics to be Covered:**

- Orientation

Course Name/Course Code: **Personal Effectiveness Formation (PERSEF2)**  
Credits and Contact Hours: 2 units (2 hours lecture)  
Instructor:

b. Student outcomes

SO-G. An ability to effectively communicate orally and in writing using the English language

**Brief List of Topics to be Covered:**

- Orientation
- Self-Management
- Ethics
- Friends and Associates
- Working on Relationships
- Marriage and Family Life
- Career Planning
- Career Preparation
- Social Responsibility
- Roles in the Community
- Cultural Sensitivity
- Situational and Motivational Leadership
- Integration
- Finals

Course Name/Course Code: **Science, Technology, and Society 1 (SOCTEC1)**  
Credits and Contact Hours: 3 units (3 hours lecture)  
Instructor: Ms. Yellowbelle Duaqui

**Textbook and Online Resources:**

- Casti, J. (1990). *Paradigms lost: tackling the unanswered questions of science*. LA: Harper Perennial.
- Conner, C.D. (2005). *A people's history of science: miners, midwives, and low mechanics*. New York: Nation Books.
- Erasga, D. (2010). When story becomes theory: storytelling as sociological theorizing. *Asia Pacific Social Science Review*, 10 (1): 21-38.
- Gribbin, J. (2002). *The scientists: a history of science told through the lives of its greatest inventors*. New York: Random House.



Course Name/Course Code:

**Brief List of Topics to be Covered:**

- Theories of Social Development
- Modernization
- State-building
- Capitalism
- Globalization
- Science, Technology and Social Development
- Science, Technology and Governance and Policy



Course Name/Course Code: **Solimen Mensuration (SOLIMEN)**  
Credits and Contact Hours: 2 units (2 hours lecture)  
Instructor:

**Textbook and Online Resources:**

- Earnhart, Richard T. (2011). *Solid Mensuration: Understanding the 3-D Space*, C&E Publishing Inc.
- Schneider D., Hornsby, J., Lial, M, Daniels, C. (2014). *Trigonometry (10th Edition)*, Pearson.
- Larson, R. (2010). *Trigonometry, 8th Edition*. Cengage Learning.
- Coburn, J. W. (2008). *Trigonometry*, The McGraw-Hill Companies, Inc.
- Lial, M. L., J. Hornsby, D. I. Schneider. (2005). *Trigonometry*, Addison Wesley.
- Sullivan, M. (2005). *Trigonometry: A Unit Circle Approach, 7th Edition*, Prentice Hall
- Swokowski, E. W. and J. A. Cole. (2002). *Algebra and Trigonometry with Analytic Geometry, 10th Edition*, Brooks/Cole.

**Course Information:**

- a. Description - Solid Mensuration course also known as Solid Geometry covers the study and measure of plane figures and solids. Topics on the measure of plane figures include concept of lines, planes, and formulas for computing the area of plane figures. Meanwhile, the measure of solids deals with Cavalieri's theorem and the Volume theorem, and the formulas for calculating the surface area (lateral and total surface area) and volume of various solids. This subject will cover solids such as cubes, rectangular parallelepipeds, prisms, cylinders, pyramids, cones, frustums, and spheres. The Theorems of Pappus as method of computing the surface area and the volume of a solid revolution is also included in the course. Students enrolled in the course are expected to relate the concepts and principles discussed to solve various practical engineering and scientific problems.
- b. Prerequisites/Co-requisites: ANAGEOM (Co-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  1. Compute areas and perimeters of regular polygon and common polygons such as triangles, parallelograms, rectangles, square, rhombus, and trapezoids.
  2. Compute areas of circles, sectors, segments, annulus, inscribed and circumscribed polygons, star polygons, elliptical section, parabolic section and

6. Compute volumes and surface areas of solid figures such as cubes, rectangular parallelepiped, prisms and cylinders, pyramids, cones, frustum of cones, frustum of pyramids, spheres, zone spherical

Course Name/Course Code: **Oral Communication / Advanced Speech Class (SPEECOM)**  
Credits and Contact Hours: 3 units (3 hours lecture)  
Instructor:

**Textbook and Online Resources:**

Plata, S., Laurilla, M., Madrunio, M. & Villegas, S. (2006). Keys to making a difference. Laguna: Trailblazer Publications.  
Brown, R. (Producer & Writer), & Wilson, J. (Director & Executive Director). (2006). The basics of how to plan, write and give a winning presentation [video recording]. Chicago, Illinois: J. Wilson and Associates.  
Hasling, J. (2010). The audience, the message, the speaker. Boston: McGraw-Hill.  
Nelson, P., Titsworth, S. , & Pearson, J. (2011). iSpeak: Public speaking for contemporary life. New York: McGraw-Hill.

**Course Information:**

- a. Description - This course is an English for Specific Purposes (ESP) course that focuses on the production, delivery, and assessment of the following oral presentations: the impromptu, lecture and/or persuasive speech for individual presentation, and the panel discussion for group presentation. The presentations aim at providing students first-hand experiences in public speaking to develop their self-confidence and critical thinking in oral presentations addressing relevant social issues.
- b. Prerequisites/Co-requisites: COMADVE (Equivalent) CORPCOM (Equivalent) ENCOMP2 (Equivalent) ENGLTRI (Equivalent) MODCOMM (Equivalent) ENGLCOM (Hard Pre-requisite)
- c. Required course

7. Use materials

Course Name/Course Code:       **Statics of Rigid Bodies (STATICS)**  
Credits and Contact Hours:       3 units (3 hours lecture)  
Instructor:

**Textbook and Online Resources:**

- Engineering Mechanics: STATICS (7th Edition), J.L. Meriam & L.G. Kraige, John Wiley & Sons, Inc. 2013
- Engineering Mechanics I (Statics), 1st Ed. Romeo Estanero (Ed), DLSU-Manila, 2002
- Engineering Mechanics: Statics, J. L. Meriam and L.G. Kraige, John Wiley & Sons, Inc., 2006
- Engineering Mechanics (12th Edition), R.C. Hibbeler, Pearson Education South Asia, 2010
- Engineering Mechanics: Statics (3rd Edition), A. Pytel, Cengage Learning, 2010.
- Engineering Mechanics: Statics and Dynamics (2nd Edition), F. Constanzo, McGraw-Hill, 2013.
- Engineering Mechanics, P. N. Chandramouli, PHI Learning Private, 2011.
- Lespérance, S. (2006, September 23). *Tacoma Bridge* [Video File]. Retrieved from <http://www.youtube.com/watch?v=uKeENdyIlul>
- Cockcroft, A. (2010, April 21). *Garage Roof Trusses*. Retrieved from <http://www.youtube.com/watch?v=d7Q-suFmOZ8&feature=related>
- [Man of Steel]. (2009, August 21). *Animation of Steel Through Howe Truss Bridge*. Retrieved from <http://www.youtube.com/watch?v=GKYVEEGjX4E&feature=related>

### **Specific Goals for the Course:**

a. Specific outcomes

1. Identify and determine the components and resultant of forces and force systems in 2D and 3D.
2. Analyze effects of forces on rigid bodies in static equilibrium using free body diagrams and equations of equilibrium.
3. Analyze the external and internal effects of forces on structures such as beams, trusses, frames and simple machines.
4. Analyze the effects of friction forces on rigid bodies in static equilibrium
5. Solve the properties (centroid, center of gravity and moment of inertia) of areas and lines and apply these properties in equilibrium problems.

b. Student outcomes

- SO-A. An ability to apply knowledge of mathematics, physical sciences, engineering sciences to the practice of civil engineering.

### **Brief List of Topics to be Covered:**







Course Name/Course Code: **Humanity's Search for Life (TREDONE)**  
Credits and Contact Hours: 3 units (3 hours lecture)  
Instructor:

**Textbook and Online Resources:**

- Barnes, M. (2004). *Theology and the Dialogue of Religions*. UK: Cambridge University Press.
- Bevans, S. and R. Schroeder (2005). *Constants in context: a theology of mission for Today*. Quezon city: Claretian Publications
- Bradley, G. (2002). *The Meaning of life*. Kansas City: Andrews McMeel Publishing
- Cacho, R. (2008). "Re-articulating soteriology, using ginhawa as model of theology of salvation for Filipinos", in *The Bible in the 21st century Philippine context*. Philippine Bible Society.
- Carroll, John (2004) *Sustainability and Spirituality*. USA: State of New York University Press.
- Edwards, D. (1986). *What are they Saying about Salvation*. New York: Paulist Press
- Flood, G. (2012). *The importance of religion : meaning and action in our strange world*. West Sussex: Wiley-Blackwell, 2012.
- Gonzalez, A. (2002). *Towards an Adult Faith*. Manila: De LaSalle Press.
- Hand, T. (2004). *Always a Pilgrim: Walking the Zen Christian Path*. California: Mercy Center Meditation Program
- Hick, John & Hebblethwaite, Brian. *Christianity And Other Religions: Selected Readings*. USA: Oxford University Press.
- Holder, A. (2005). *The Blackwell Companion to Christian Spirituality*. USA: Blackwell Publishing.
- Kim, S. (2008). *Christian Theology in Asia*. New York: Cambridge University Press.
- Longchar, Wati (2007) *Traditions and Culture of Indigenous Peoples*. Indonesia: Asia Pacific Alliance of YMCAs and Interfaith Cooperation Forum.
- Mallon, E. D. (2006).

spiritual gifts from the great traditions in turn show the way to promoting justice, peace, and integrity of creation.

In this course, the students discern the role that faith plays in their lives as they grapple with the questions and concerns on the meaning of life. As the course looks at the distinctiveness of Christianity and its different faith expressions, students are led to discover and critically appreciate the life-giving roots exemplified in their own beliefs, norms and rituals. They deepen their understanding the meaning life by recognizing the truth, goodness and beauty found in the different religious traditions.

- b. Prerequisites/Co-requisites: None
- c. Required course

### **Specific Goals for the Course:**

- a. Specific outcomes
  1. Respond to the Lasallian vision-mission as to contribute in the personal, communal, ecclesial, and societal growth and transformation
  2. Appreciate own faith expressions and involve themselves, support, and promote inter-religious dialogue and ecumenism
- b. Student outcomes
  - SO-G. An ability to effectively communicate orally and in writing using the English language

### **Brief List of Topics to be Covered:**

- Our search for the meaning of life
- The Christian perspective on the fullness of life
- Witnessing as faith communities
- Inter-religious dialogue in the Philippines
- The wisdom and inspiration from the great faith traditions



- b. Prerequisites/Co-requisites: TREDTWO (Hard Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  - 1. Respond to the Lasallian vision-mission as to contribute in the personal, communal, ecclesial, and societal growth and transformation
  - 2. Appreciate own faith expressions and involve themselves, support, and promote inter-religious dialogue and ecumenism

- b. Student outcomes

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- b. Prerequisites/Co-requisites: TREDONE (Hard Pre-requisite)
- c. Required course

**Specific Goals for the Course:**

- a. Specific outcomes
  - 1. Respond to the Lasallian vision-mission as to contribute in the personal, communal, ecclesial, and societal growth and transformation
  - 2. Appreciate own faith expressions and involve themselves, support, and promote inter-religious dialogue and ecumenism
- b. Student outcomes
  - SO-G. An ability to effectively communicate orally and in writing using the English language

**Brief List of Topics to be Covered:**

- The Ethical and Christian Perspectives Identity, Ethical Identity and Reality
- Voices that Dictates my Actions and Interactions: The Moral Landscape
- Conversion and Reconciliation (Pagbabalik-loob) with God, with Others, with Creation
- Becoming Human Together as Christian
- Solidarity with Others especially with the Marginalized and the Exploited and with the Whole of Creation