Stony Brook University
College of Engineering and Applied Sciences
Department: _____

Date: _____

Student Survey

Student Information

1. Please circle your status within the Department of

Freshman Sophomore Junior Senior

2. How many years after high school will you take to graduate?

□ 3 years □ 4 years □ 5 or more years

3. After graduation what is your career plan?

G	G	G	G	G
Work in Industry	Go to Graduate School	Start a Business	Pursue a Professional Degree (Law, Medicine, etc., please specify)	Other Please specify

Overall Impression

1. On a scale of 1 to 5, 1 being poor and 5 being excellent, please describe your overall impression of the department.

1 2 3 4 5

If less than 3, describe what you would want to change.

2. Would you recommend this department at Stony Brook University to other students starting college?

1	2	3	4	5
No	Maybe	Yes	Strongly Recommend	Definitely

3. What changes would you suggest we make in the program you majored in?

Objectives:

1. Our first objective is – Establish a successful career in engineering or related fields in industry and other organizations where an engineering approach to problem solving is highly valued. Does this capture the career and professional outcome that graduates desire?

1	2	3	4	5
Not Agree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

2. Our second objective is – Excel in graduate study and research, reaching advanced degrees in engineering and related disciplines. Does this capture the career and professional outcome that our graduates desire?

1	2	3	4	5
Not Agree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

3. Our third objective is – Contribute significantly in multidisciplinary work environment including leadership role in engineering projects. Does this capture the career and professional outcome that graduates desire?

1	2	3	4	5
Not Agree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

4. Our fourth objective is – Achieve success n personal and professional development through life-long learning. Does this capture the career and professional outcome that graduates desire?

1	2	3	4	5
Not Agree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

5. Please comment if these objectives capture high level goals that most graduates will subscribe to. If not, comment what else should be included and what should be deleted. Remember we do not want more than 4 or 5 objectives.

Outcomes:

The following categories describe ABET criteria A-K that our program must meet. Please mark an "X" those courses that provided you education to meet these A-K criteria.

a. an ability to apply knowledge of mathematics, science, and engineering;
b. an ability to design and conduct experiments, as well as to analyze and interpret data;
c. an ability to design a system, component, or process to meet desired needs;
d. an ability to function on multi-disciplinary teams;
e. an ability to identify, formulate, and solve engineering problems;
f. an understanding of professional and ethical responsibility;
g. an ability to communicate effectively;
h. the broad education necessary to understand the impact of engineering solutions in a global/societal context;
i. a recognition of the need for an ability to engage n life-long learning;
j. a knowledge of contemporary issues, and
k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Fundamentals of Engineering

The next question is related to what you should have learned. This applies to all engineering graduates and is of elementary nature. Follow the following process while answering these questions on a scale of 1 to 5, 1 being not learned, 5 being learned extremely well.

A. Mathematics students should know:
Analytic geometry; Integral calculus; Matrix operations; Roots of equations; Vector analysis; Differential equations; Differential calculus

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

B. Engineering Probability and Statistics students should know**:**
Measures of central tendencies and dispersions (e.g.; mean; mode; standard deviation); Probability distributions (e.g.; discrete; continuous; normal; binomial); Conditional probabilities; Estimation (e.g.; point; confidence intervals) for a single mean; Regression and curve fitting; Expected value (weighted average) in decision-making; Hypothesis testing

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

C. Chemistry students should know**:**
Nomenclature; Oxidation and reduction; Periodic table; States of matter; Acids and bases; Equations (e.g.; stoichiometry); Equilibrium; Metals and nonmetals

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

D. Computers students should know**:**
Terminology (e.g.; memory types; CPU; baud rates; Internet); Spreadsheets (e g.; addresses; interpretation; "what if;" copying formulas); Structured programming (e.g.; assignment statements; loops and branches; function calls)

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

E. Ethics and Business Practices students should know**:**
Code of ethics (professional and technical societies); Agreements and contracts; Ethical versus legal; Professional liability; Public protection issues (e.g.; licensing boards)

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

E. Engineering Economics students should know**:**
Discounted cash flow (e.g.; equivalence; PW; equivalent annual FW; rate of return); Cost (e g; incremental; average; sunk; estimating); Analyses (e g; breakeven; benefit-cost); Uncertainty (e.g.; expected value and risk)

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

G. Engineering Mechanics (Statics and Dynamics) students should know**:**
Resultants of force systems; Centroid of area; Concurrent force systems; Equilibrium of rigid bodies; Frames and trusses; Area moments of inertia; Linear motion (e.g.; force; mass; acceleration; momentum); Angular motion (e.g.; torque; inertia; acceleration; momentum); Friction; Mass moments of inertia; Impulse and momentum applied to: particles, rigid bodies; Work; energy; and power as applied to: particles, rigid bodies;

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

H. Strength of Materials students should know**:**
Shear and moment diagrams; Stress types (e.g.; normal; shear; bending; torsion); Stress strain caused by: axial loads, bending loads, torsion, shear; Deformations (e.g.; axial; bending; torsion); Combined stresses; Columns; Indeterminant analysis; Plastic versus elastic deformation

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

I. Material Properties students should know**:**
Properties: chemical, electrical, mechanical, physical; Corrosion mechanisms and control; Materials: engineered materials, ferrous metals, nonferrous metals,

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

J. Fluid Mechanics students should know**:**
Flow measurement, Fluid properties, Fluid statics, Energy; impulse; and momentum equations, Pipe and other internal flow

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

K. Electricity and Magnetism students should know**:**
Charge, energy, current, voltage, power; Work done in moving a charge in an electric field (relationship between voltage and work); Force between charges; D. Current and voltage laws (Kirchhoff, Ohm); Equivalent circuits (series, parallel); Capacitance and inductance; Reactance and impedance, susceptance and admittance; AC circuits; Basic complex algebra

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

L. Thermodynamics students should know**:**
Thermodynamic laws (e.g., 1st Law, 2nd Law); Energy, heat, and work; Availability and reversibility; Cycles; Ideal gases; Mixture of gases; Phase changes; Heat transfer; I. Properties of: enthalpy, entropy

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

Mechanical Engineering Specific

The next question relates to only Mechanical Engineering. Please rate using the following scale:

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

M. Mechanical Design and Analysis students should know**:**
Stress analysis (egg., combined stresses, torsion, normal, shear); Failure theories (e.g, static, dynamic, buckling); Failure analysis (eg., creep, fatigue, fracture, buckling); Deformation and stiffness; Components (e.g. springs, pressure vessels, beams, piping, bearings, columns, power screws); Power transmission (e.g., belts, chains, clutches, gears, shafts, brakes; Joining (eg., threaded fasteners, rivets, welds, adhesives); Manufacturability (eg., fits, tolerances, process capability); Quality and reliability; Mechanical systems (eg., hydraulic, pneumatic, electro-hybrid)

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

N. Kinematics, Dynamics, and Vibrations students should know**:**
Kinematics of mechanisms; Dynamics of mechanisms; Rigid body dynamics; Natural frequency and resonance; Balancing of rotating and reciprocating equipment; Forced vibrations (e.g., isolation, force transmission, support motion)

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

O. Materials and Processing students should know**:**
Mechanical and thermal properties (e.g., stress/strain relationships, ductility, endurance, conductivity, thermal expansion); Manufacturing processes (e.g., forming, machining, bending, casting, joining, heat treating); Thermal processing (e g., phase transformations, equilibria); Materials selection (e.g., metals, composites, ceramics,
plastics, biomaterials); Surface conditions (eg , corrosion, degradation, coatings, finishes); Testing (e.g., tensile, compression, hardness)

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

P. Measurements, Instrumentation, and Controls students should know**:**
Mathematical fundamentals (e.g., Laplace transforms, differential equations); System descriptions (e.g., block diagrams, ladder logic, transfer functions); Sensors and signal conditioning (e.g., strain, pressure, flow, force, velocity, displacement, temperature); Data collection and processing (e.g., sampling theory, uncertainty, digital/analog, data transmission rates); Dynamic responses (e.g., overshoot/time constant, poles and zeros, stability)

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

Q. Thermodynamics and Energy Conversion Processes students should know**:**
Ideal and real gases; Reversibility/irreversibility; Thermodynamic equilibrium; Psychrometrics; Performance of components; Cycles and processes (e.g., Otto, Diesel, Brayton, Rankine); Combustion and combustion products; Energy storage; Cogeneration and regeneration/reheat

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

R. Fluid Mechanics and Fluid Machinery students should know**:**
Fluid statics; Incompressible flow; Fluid transport systems (eg. pipes, ducts, series/parallel operations); Fluid machines: incompressible (e.g., turbines, pumps, hydraulic motors); Compressible flow; Fluid machines: compressible (e.g., turbines, compressors, fans); Operating characteristics (e.g., fan laws, performance curves, efficiencies, work/power equations); Lift/drag; Impulse/momentum

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

S. Heat Transfer students should know**:**
Conduction; Convection; Radiation; Composite walls and insulation; Transient and periodic processes; Heat exchangers; Boiling and condensation heat transfer

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

T. Refrigeration and HVAC students should know**:**
Cycles; Heating and cooling loads (e.g., degree day data, sensible heat, latent heat); Psychrometric charts; Coefficient of performance; Components (e.g., compressors, condensers, evaporators, expansion valve)

1	2	3	4	5
Not Learned	Learned Somewhat	Learned	Learned Well	Learned Extremely Well

General Curriculum

Please answer the next few questions on a scale of 1 to 5

1) When you enrolled in Mechanical Engineering, you had certain expectations. Did we meet them?

1	2	3	4	5
No	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

2) Does the curricula sequence seem logical to you?

1	2	3	4	5
No	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

3) Do exams and labs accurately measure your ability?

1	2	3	4	5
No	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

4) Are teaching assistants knowledgeable and helpful to you?

1	2	3	4	5
No	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

5) Was the Design Experience satisfactory?

1	2	3	4	5
No	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

6) What would you like us to change in the curriculum, please comment.

Academic Integrity

1) Was there cheating in the exams?

1	2	3	4	5
There was cheating	Some cheating	Do not know	Reasonably honest	High honesty

2) Was there copying from previous years labs?

1	2	3	4	5
There was cheating	Some cheating	Do not know	Reasonably honest	High honesty

Teaching

University