**Engineering**

**EsGR 1103 - Principles of Engineering**

**Analysis/Design ............................................00 OR 3.00 Credits**

In this course, the field of engineering is introduced by an elementary presentation of the principles of the engineering sciences such as mechanics, thermodynamics and scientific computing (utilized in the analysis and design of engineering problems.

**Business**

*Prerequisite: MATH 1113.*

**Education**

**EsGR 1200 - Engineering Computing .....00 OR 3.00 Credits** This course is designed to provide students with the basic concepts of structured programming with an emphasis on developing algorithm, pseudo code, flowchart and programming in a modern high level language. Different software tools will be used to introduce various engineering problem solving techniques.

**EsGR 1203 - Engineering Graphics .........00 OR 3.00 Credits**

**Sciences &**

**Health**

**Professions**

In this course, an introduction to engineering graphics and design including sketching, drawing, projection theory, tolerances and computer aided graphics will be covered.

**EsGR 2001 - Intro to EsGR Materials ...............3.00 Credits** This course is designed to introduce students to the relationship of structure - property processing of engineering materials. From an understanding of the microstructure of materials and phase diagrams, major mechanical, electrical, chemical, thermal, optical properties as well as material selection and processing for engineering applications will be covered.

**Graduate**

**School**

*Prerequisite(s): E,GR 1103 and CHEM 1211K.*

**EsGR 2025 - Intro to**

**Signal Processing..........................................00 OR 4.00 Credits** Introduction to signal processing for discrete-time and continuous time signals including topics on filtering, frequency response, Fourier transform, Z transform. The laboratory emphasizes computer based signal processing.

**Course**

**Descriptions**

*Prerequisite: MATH 2111, PHYS 2100 or CSCI 2101.*

**EsGR 2104 - Cross Enrlment/GA Tech/ ..............3.00 Credits**

In this course the principles of material and energy balances, development of energy and material balance equations (as it relates to their applications to chemical systems) and steady state and transient analysis of their applications will be covered. *Prerequisite(s): ( CHEM 1212K US D or CHEM 1212 US D or CHM*

**Personnel &**

**Index**

*203 UG D) and ( MATH 2213 US D or MTH 330 UG D ).*

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**Course Descriptions**

**EsGR 2201 - Engineering Statics .........................3.00 Credits**

**Albany State**

In this course, the principles of statics (vector based) in two and three dimensions will be covered. Concept of force, moment equilibrium principle, truss, center of gravity and friction will be taught by solving realistic problems. This course is designed for Pre Engineering majors. It will satisfy the requirement by Georgia Institute of Technology for the Regents Engineering Transfer Program and the dual degree program.

**Arts & Humanities**

*Prerequisite(s): (PHYS 2221K US D or PHYS 2221 US D) and E,GR*

*1103 US D. Co-requisite(s): MATH 2213.*

**EsGR 2204 - Statics & Mechanics/Materials......4.00 Credits**

In this course the principles of statics (vector based) in two and three dimensions (as it relates to their applications in the analysis of structures, machines and fiction) and the mechanics of deformable bodies; stress, strain, axial loading, torsion, and bending of beams, principal stresses and Mohr's circle for Plane stress will be covered. Prerequisite: MATH 2213 and PYS 2221K.

**Business**

*Prerequisite(s): ( MATH 2213 US D or MTH 330 UG D) and (PHYS*

*2221K US D or PHYS 2221 US D).*

**EsGR 2304 - Statics and Dynamics .....................4.00 Credits**

In this course the principles of statics (vector based) in two and three dimensions and their applications in the analysis of structures, friction, machine elements; and the kinematics and kinetics of rigid bodies in plane motion will be covered.

**Education**

*Prerequisite(s): ( MATH 2213 US D or MTH 330 US D ) and ( PHYS*

*2221K US D or PHYS 2221 US D).*

**EsGR 2404 - Dynamics of Rigid Bodies ..............3.00 Credits**

In this course the kinematics and kinetics of particles and rigid bodies in one and two dimensions in plane motion, kinematics and kinetics of rigid bodies in three-dimensional motion and principles of work, energy and momentum will be covered.

**Sciences &**

**Health**

**Professions**

*Prerequisite(s): (E,GR 2204 US D OR E,GR 2201 US D).*

**EsGR 2413 - Electric Circuit Analysis ................3.00 Credits**

In this course the study and analysis of AC and DC electric circuits, circuit elements, steady state and transient analysis and applications will be covered. (Recommended for majors in Electrical Engineering).

*Prerequisite(s): (E,GR 1103 US D PHYS 2222K US D and MATH*

*2213 US D).*

**Graduate**

**School**

**EsGR 3204 - Fluid Mechanics ..............................3.00 Credits**

In this course principles and applications of fluid mechanics (including fluid statics, equations of motion and energy as applied to incompressible and compressible fluid flows) and dimensional analysis and similarity will be covered.

*Prerequisites: PHYS 221K US C, MATH 3211, E,GR 1103.*

**Course**

**Descriptions**

**EsGR 3313 - Electrical Circuits Electrical Systems2.00 Credits** In this course analysis of AC and DC circuits, electronic elements an introduction to digital and analog electronics logic circuits, Boolean representation, sequential systems, operational amplifiers, and communication systems will be covered. (not for EE majors.) *Prerequisite: E,GR 1103, PHYS 2222K, and MATH 2213.*

**EsGR 3314 - sumerical Methods of Engineers ..3.00 Credits**

In this course Computer modeling and solution of engineering problems using numerical methods and the development of programs using high level languages. (Uses of software such as MATLAB MATHEMATICA will becovered.)

*Prerequisite: E,GR 1103, MATH 2212, MATH 2213, MATH 3211*

*and knowledge of computers.*

**EsGR 3321 - Electronics and Instrument Lab ...3.00 Credits**

In this course experiments involving first order circuits, integrated circuits, Op-Amp Computational elements, combinational and sequential logic, and analog-to-digital conversion systems will be covered.

*Prerequisite: E,GR 2413.*

**EsGR 3404 - Intro to Thermal Engr....................4.00 Credits**

In this course basic theory of the fields of thermodynamics, heat transfer and fluid mechanics and their application to thermal energy systems will be covered (course not recommended for ME majors). *Prerequisites: CHEM 1211K, E,GR 1103, PHYS 2221K and MATH*

*2213.*

**EsGR 3504 - Engineering Thermodynamics ......3.00 Credits**

In this course concepts of thermodynamics, properties of substances, development of the laws of thermodynamics and their applications, second law analysis of thermodynamics systems, power and registration cycles will be covered.

*Prerequisite: E,GR 1103,PHYS 2222K and MATH 2213.*