

CHEM, BIO, ENVIRO ENGINEERING (CBEE)

CBEE 101, CHEMICAL, BIOLOGICAL, AND ENVIRONMENTAL ENGR ORIENTATION, 3 Credits

Introduction to the engineering profession in general and in particular the CHE, BIOE, and ENVE programs; development of problem solving strategies and teamwork; analysis and presentation of experimental data, basic process calculations, and design methodologies.

Equivalent to: CBEE 101H

CBEE 101H, CHEMICAL, BIOLOGICAL, AND ENVIRONMENTAL ENGR ORIENTATION, 3 Credits

Introduction to the engineering profession in general and in particular the CHE, BIOE, and ENVE programs; development of problem solving strategies and teamwork; analysis and presentation of experimental data, basic process calculations, and design methodologies.

Attributes: HNRS – Honors Course Designator

Equivalent to: CBEE 101

CBEE 102, ENGINEERING PROBLEM SOLVING AND COMPUTATIONS, 3 Credits

Elementary programming and problem-solving concepts implemented using MATLAB software; emphasis on problem analysis and development of algorithms in engineering including dimensional analysis; application experiences are established through team-based activities including projects using the LEGO-NXT microprocessor for data acquisition.

Prerequisite: MTH 112 with C or better or MTH 251 with C or better or MTH 251H with C or better

Equivalent to: BIOE 102, CBEE 102H, CHE 102, ENVE 102

CBEE 102H, ENGINEERING PROBLEM SOLVING AND COMPUTATIONS, 3 Credits

Elementary programming and problem-solving concepts implemented using MATLAB software; emphasis on problem analysis and development of algorithms in engineering including dimensional analysis; application experiences are established through team-based activities including projects using the LEGO-NXT microprocessor for data acquisition.

Attributes: HNRS – Honors Course Designator

Prerequisite: MTH 112 with C or better or MTH 251 with C or better or MTH 251H with C or better

Equivalent to: CBEE 102

CBEE 111, ENGINEERING PROBLEM SOLVING FUNDAMENTALS, 3 Credits

Engineering problem solving, dimensional analysis, sketches and drawings, algorithmic thinking, arrays and indexing, understanding the operating system and file handling, the concepts of programming languages and syntax, troubleshooting approaches to coding. Lec/Studio

This course is repeatable for 3 credits.

CBEE 211, MATERIAL BALANCES AND STOICHIOMETRY, 3 Credits

Material balances, thermophysical, and thermochemical calculations. Lec/rec.

Prerequisite: MTH 252 with C or better or MTH 252H with C or better

Equivalent to: BIOE 211, CBEE 211H, CHE 211, ENVE 211

Recommended: General chemistry and second-year standing in engineering

CBEE 211H, MATERIAL BALANCES AND STOICHIOMETRY, 3 Credits

Material balances, thermophysical, and thermochemical calculations. Lec/rec.

Attributes: HNRS – Honors Course Designator

Prerequisite: MTH 252 with C or better or MTH 252H with C or better

Equivalent to: CBEE 211

Recommended: General chemistry and second-year standing in engineering

CBEE 212, ENERGY BALANCES, 3 Credits

Energy balances, thermophysical and thermochemical calculations. Lec/rec.

Prerequisite: (CBEE 211 with C or better or CBEE 211H with C or better) and (MTH 256 (may be taken concurrently) [C] or MTH 256H (may be taken concurrently) [C])

Equivalent to: BIOE 212, CBEE 212H, CHE 212, ENVE 212

Recommended: One year general chemistry and second-year standing in engineering

CBEE 212H, ENERGY BALANCES, 3 Credits

Energy balances, thermophysical and thermochemical calculations. Lec/rec.

Attributes: HNRS – Honors Course Designator

Prerequisite: (CBEE 211 with C or better or CBEE 211H with C or better) and (MTH 256 (may be taken concurrently) [C] or MTH 256H (may be taken concurrently) [C])

Equivalent to: CBEE 212

Recommended: One year general chemistry and second-year standing in engineering

CBEE 213, PROCESS DATA ANALYSIS, 4 Credits

Applications of material and energy balances, with an emphasis on data analysis important to chemical engineers, bioengineers, and environmental engineers. Contextual learning is emphasized through the laboratory component and the use of process flow simulation modeling and analysis software.

Prerequisite: CBEE 212 (may be taken concurrently) with C or better or CBEE 212H (may be taken concurrently) with C or better

Equivalent to: BIOE 213, CHE 213, ENVE 213

CBEE 280, MATERIAL AND ENERGY BALANCES, 0-6 Credits

Material balances, thermophysical, and thermochemical calculations.

Energy balances, thermophysical and thermochemical calculations.

Prerequisite: MTH 256 (may be taken concurrently) with C or better or MTH 256H (may be taken concurrently) with C or better

This course is repeatable for 6 credits.

Available via Ecampus

CBEE 320, PROFESSIONALISM AND ENGINEERING ETHICS, 3 Credits

Introduction to engineering ethics. Topics include ethical theory, professional engineering responsibility, codes of ethics, ethical assessment, conflicts of interest, risk and safety, loyalty and dissent, as well as overarching professional concerns.

Prerequisite: CBEE 212 with C or better or CBEE 212H with C or better or CBEE 280 with C or better

Equivalent to: BIOE 320

CBEE 414, ^PROCESS ENGINEERING LABORATORY, 3 Credits

Unit operations and unit processes; preparation of technical reports. Lec/lab. (Writing Intensive Course)

Attributes: CWIC – Core, Skills, WIC

Prerequisite: CBEE 213 (may be taken concurrently) with C or better and CHE 311 [C] and (CHE 333 [C] or CHE 333H [C])

Equivalent to: BIOE 414, CBEE 414H, CHE 414, CHE 414H, ENVE 414

CBEE 414H, ^PROCESS ENGINEERING LABORATORY, 3 Credits

Unit operations and unit processes; preparation of technical reports. Lec/lab. (Writing Intensive Course)

Attributes: CWIC – Core, Skills, WIC; HNRS – Honors Course Designator

Prerequisite: CBEE 213 (may be taken concurrently) with C or better and CHE 311 [C] and (CHE 333 [C] or CHE 333H [C])

Equivalent to: CBEE 414

CBEE 416, CBEE LABORATORY II, 3 Credits

Integration of overall knowledge of chemical, biological, and environmental engineering through group project activities culminating with public demonstration or display of project results.

Prerequisite: CHE 415 with C or better or CHE 415H with C or better or BIOE 415 with C or better or ENVE 415 with C or better

Equivalent to: CHE 416

CBEE 507, SEMINAR, 1 Credit

Graded P/N.

This course is repeatable for 6 credits.