General Studies Gold Request Form

Consult the General Studies Request FAQ for more information and quick answers.

New permanent numbered courses must be submitted to the workflow in Kuali CM before a General Studies request is submitted here. The General Studies Council will not review requests ahead of a new course proposal being sent to the Senate.

Submission Information

College/School	Department/School
Ira A. Fulton Schools of Engineering (CES)	Computer Science and Engineering Program (CCOMPENG)

Submission Type

Mandatory Review

ASU Request

Is this request for a permanent course or a topic?

Permanent Course

Subject Code	Course Number	Units/Credit Hours
CSE	205	3

Course Information
Enter the course catalog information, found in the web course catalog or Kuali CM.

Course Title

Object Oriented Programming and Data Structures

Course Catalog Description

Problem solving by programming with an object-oriented programming language. Introduces data structures. Overview of computer science topics.

Enrollment Requirements (Prerequisites, Corequisites, and/or Antirequisites)

Prerequisite(s): CSE 100 or 110 with C or better OR Data Science, Analytics and Engineering PhD, Industrial Engineering MS, or Industrial Engineering PhD student; Credit is allowed for only ACO 102 or CSE 205 OR Visiting University Student

Is this a crosslisted course?

No

Is this course offered by (shared with) another academic unit?

No

If this course or topic already carries a different General Studies Gold (not Maroon) designation than the one being requested, please check this box.

General Studies Gold Designation Request

Requested Designation

Quantitative Reasoning (QTRS)

Attach a representative syllabus for the course, including course learning outcomes and descriptions of assignments and assessments.

[Syllabus for CSE 205_ Object-Oriented Program & Data (2024 Fall C - Hybrid QTRS).pdf](#)

Quantitative Reasoning (QTRS)
Quantitative and computational reasoning is essential for success in 21st-century careers, for critically evaluating information in the age of "big data," for assessing the quality of arguments conveyed through digital media, for informed participation in community and social life, and for contributing to the formulation of effective solutions for achieving a sustainable and just future. Quantitative reasoning enables students to apply relevant mathematical, statistical, computational, and visualization methods in academic, social and personal settings.

In a quantitative reasoning course, students learn about data, data management, data summaries, data visualization, and the use of computational tools with data. Data can take many forms, including numerical data, textual data, images, and others. Students also learn about how quantitative reasoning can be used to make arguments clear, precise and verifiable. Finally, they learn to build quantitative models, make predictions, and communicate their findings based on available data. This may include some combination of mathematical, statistical, computational or network models, or visualizations.

Most of the course content should align with the Gold category learning outcomes.

Instructions: In the fields below, state the assignment, project, or assessment that will measure each learning outcome, and provide a description. The description should provide enough detail to show how it measures the learning outcome. If needed, more than one can be identified.

The proposal does not need to include all course assessments that measure a given learning outcome. The provided assessment should include sufficient detail to allow the subcommittee to make their evaluation. When appropriate, the same assessment can be listed for more than one learning outcome (e.g., a culminating project).

You may provide links to a document (Google Drive or Dropbox) that includes the relevant details for the assessment. Do not provide links to Canvas shells.

QTRS Learning Outcome 1: Understand variables, measurement and data, including how they can be used to pose and answer questions about society and nature, and to manipulate, organize, classify and visualize quantitative data.

Lab Challenge 3B (BankAccount, Saving Account, Checking Account, etc) - https://www.dropbox.com/scl/fi/osy2omylf3mqrur2ze8vu/Section-18.2-CSE205-Object-Oriented-Programming-and-Data-Structures-_-zyBooks.pdf?rlkey=zra8cojp7jbterd9lblbtzlfh&dl=0

Individual Assignment 03 (Bank Account classes) - https://www.dropbox.com/scl/fi/oto1l6dj1o1na7du3bwyj/Section-19.1-CSE205-Object-Oriented-Programming-and-Data-Structures-_-zyBooks.pdf?rlkey=0d0pu1brhgi20wqo85ypzfp79&dl=0

This assignment requires students to engage in multiple aspects of quantitative reasoning, including modeling, computational analysis, and communication of data-driven insights. Through this assignment students have to apply quantitative reasoning in a meaningful, real-world context.

QTRS Learning Outcome 2: Evaluate arguments from everyday life or academic fields of study that are represented mathematically, statistically, computationally, or in visualizations.

Lab Project 5A - Expression Evaluator - https://www.dropbox.com/scl/fi/dtq628z2yhuozt7fscul9/Section-27.2-CSE205-Object-Oriented-Programming-and-Data-Structures-_-zyBooks.pdf?rlkey=nsiow35z2clw2dau8dz7lqcxr&dl=0

This assignment requires students to understand and implement the computational mechanics of evaluating complex mathematical expressions of the kind that can be used to ask and answer important questions about real-world problems.

QTRS Learning Outcome 3: Formulate hypotheses, mathematical models or narratives that are consistent with quantitative data.

Individual Assignment 06 - Student Record Database - https://www.dropbox.com/scl/fi/opjgna1ndeh4f7e1l4ry1/Section-36.2-CSE205-Object-Oriented-Programming-and-Data-Structures-_-zyBooks.pdf?rlkey=1q46elim8v9akqzg8yjv8f5qr&dl=0

This assignment requires students to implement a Student Records Database Application. Each Student Record will include the Student ID# (to be used as the index), Student Name, and current course grade. The user of the application will be able to import a roster of students from a file, then perform operations on the database such as registering new students, updating an existing student record, displaying the student with the highest grade, and displaying the student with the lowest grade. The database is implemented as a Binary Search Tree, using the student ID as the index.

QTRS Learning Outcome 4: Communicate how quantitative data, interpretations, or models are connected to outcomes, predictions, decisions, explanations, or future states.

Individual Assignment 05 - https://www.dropbox.com/scl/fi/058jx78n49h1aikk4q3mg/Section-29.1-CSE205-Object-Oriented-Programming-and-Data-Structures-_-zyBooks.pdf?rlkey=9hra349iue6gbhz77shequi4z&dl=0

Students make a choice about the foundational data structure used to implement this assignment. This choice impacts the performance of the resulting program.

QTRS Learning Outcome 5: Effectively employ one or more digital tools to demonstrate quantitative reasoning, interpretations of calculations, or the creation and evaluation of visualizations.

Lab Challenge 5B - Monster v.s Monster -
https://www.dropbox.com/scl/fi/hnom0kpjfhh0jjnpefv1y/Section-28.2-CSE205-Object-Oriented-Programming-and-Data-Structures-_-zyBooks.pdf?rlkey=dr3rzf88yfdp23wlh95ytrszt&dl=0

Students are required to create a UML diagram for the Monster class hierarchy. The UML diagram represents classes, attributes, and methods, including inheritance relationships between the Monster Interface, BasicMonster, Multi-AttackMonster and CrazyMonster. Students can explain how their UML diagram visually communicates the structure and behavior of the system.

List all course-specific learning outcomes. Where appropriate, identify the associated QTRS learning outcome(s) in brackets (see below for example). Note: It is expected that a majority of course-specific learning outcomes will be associated with a QTRS learning outcome.

1. To introduce issues related to software development [QTRS 02, 05]
2. To introduce concepts of data structure organization [QTRS 01]
3. To introduce Object Oriented language constructs [QTRS 04]
4. To introduce the issues of Algorithms [QTRS 03]
5. To introduce social and ethical issues of computer science

Provost Use Only

Backmapped Maroon Approval

No Response

Form Submission - Proposer

Submitted for Approval | Proposer

Ryan Meuth - November 18, 2024 at 10:18 AM (America/Phoenix)

Department Approval

Approved

Rong Pan

Allison Curran - November 18, 2024 at 10:35 AM (America/Phoenix)

> Approved to next level

Janaka Balasooriya

Aviral Shrivastava

Ross Maciejewski

GSC Coordinator Review

Sent Back

TJ Robedeau - November 18, 2024 at 10:45 AM (America/Phoenix)

> Please include in the syllabus the GS Gold Syllabus Statements exactly and with no changes made, "This course fulfills...". The GS Gold Syllabus Statements can be found at the following website: https://docs.google.com/document/d/1JrFD2qKryUpvc0wvj4C2N8i0lqoQKY4XRmFOgkNnyF0/edit?tab=t.0. Thank you!

April Randall

Form Submission - Proposer

Submitted for Approval | Proposer

Ryan Meuth - November 18, 2024 at 10:52 AM (America/Phoenix)

Department Approval

Approved

Rong Pan

Allison Curran - November 18, 2024 at 11:02 AM (America/Phoenix)

> Approved for next level.

Janaka Balasooriya

Aviral Shrivastava

Ross Maciejewski

GSC Coordinator Review

Approved

TJ Robedeau - November 18, 2024 at 11:44 AM (America/Phoenix)

April Randall

Assistant Vice Provost Review

Approved

Tamiko Azuma - November 18, 2024 at 11:48 AM (America/Phoenix)

All required components confirmed.

Pre-GSC Meeting

Approved

TJ Robedeau - November 18, 2024 at 11:49 AM (America/Phoenix)

April Randall

Quantitative Reasoning (QTRS) Subcommittee

Acknowledgement Requested

Abhishek Singharoy

Jason Nichols

Terri Kurz - December 3, 2024 at 10:34 AM (America/Phoenix)

Revise and Resubmit: This is a programming class that teaches students how to use code to establish databases and queries, set up the order of operations for basic math, manipulate data to display, does not assess data and connect to future states or predictions. Does not align well with QTRS learning outcomes and needs more explanation and clarity around how data are used to answer questions or evaluate outcomes. The descriptions of the assignments lack clarity and description regarding their relationship to the QTRS learning outcomes. Links to assignments is not how the form is supposed to be filled out. There should be an explanation of how the course meets the learning outcome specifically through assignments.

Michelle Mancenido

Elizabeth Kizer

General Studies Council Meeting

Waiting for Approval

TJ Robedeau

April Randall

Proposer Notification

Notification

Ryan Meuth

College Notification

Notification

Shawn Jordan

Amy Riggs

Cindy Boglin

Mike Sever

Tiffany Wingerson

Bob Monahan

Allison Curran

Elizabeth Tripodi

James Collofello

Jeremy Helm

Sergio Quiros