CBM003 ADD/CHANGE FORM

	or	
☒ **Undergraduate Council** ☐ **New Course** ☒ **Course Change** **Core Category:** <u>Math/Reason</u> **Effective Fall 2013**		**Graduate/Professional Studies Council** ☐ **New Course** ☐ **Course Change** **Effective Fall 2012**

1. Department: <u>Engineering Technology</u> College: <u>TECH</u>   APPROVED SEP - 4 2013

2. Faculty Contact Person: <u>Driss Benhaddou</u> Telephone: <u>713-743-5818</u>   Email: <u>dbenhaddou@uh.edu</u>

3. Course Information on New/Revised course:
   - Instructional Area / Course Number / Long Course Title:
     <u>ELET</u> / <u>2300</u> / <u>Introduction to C++ programming</u>

   - Instructional Area / Course Number / Short Course Title (30 characters max.)
     <u>ELET</u> / <u>2300</u> / <u>INTRO. C++ PROGAMMING</u>

   - SCH: <u>3.00</u> Level: <u>SO</u> CIP Code: <u>15.1201.0019</u> Lect Hrs: <u>3</u> Lab Hrs: <u>0</u>

4. Justification for adding/changing course: **To meet core curriculum requirements**

5. Was the proposed/revised course previously offered as a special topics course? ☐ Yes ☒ No
   If Yes, please complete:
   - Instructional Area / Course Number / Long Course Title:
     _____ / _____ / _____

   - Course ID: _____ Effective Date (currently active row): _____

6. Authorized Degree Program(s): <u>UH Core</u>
   - Does this course affect major/minor requirements in the College/Department?   ☐ Yes ☒ No
   - Does this course affect major/minor requirements in other Colleges/Departments?   ☐ Yes ☒ No
   - Can the course be repeated for credit?   ☐ Yes ☒ No (if yes, include in course description)

7. Grade Option: <u>Letter (A, B, C ...)</u>   Instruction Type: <u>lecture ONLY</u>   (Note: Lect/Lab info. must match item 3, above.)

8. If this form involves a change to an existing course, please obtain the following information from the course inventory: Instructional Area / Course Number / Long Course Title
   <u>ELET</u> / <u>2300</u> / <u>Introduction to C++ Programming</u>

   - Course ID: <u>20618</u> Effective Date (currently active row): <u>8272012</u>

9. Proposed Catalog Description: (If there are no prerequisites, type in "none".)
   Cr: 3. (3-0). Prerequisites: MATH 1330. Description (30 words max.): Fundamentals of C++ programming, conditional and looping constructs, functions and function overloading, arrays, pointers and references, class concepts, and files. Emphasis on practical applications.

10. Dean's Signature: __   10/11/12

    Print/Type Name: <u>Fred Lewallen, Associate Dean for Academic Affairs</u>

- Created on 10/5/2012 9:31:00 AM -

REQUEST FOR COURSES IN THE CORE CURRICULUM

Originating Department or College: Engineering Technology

Person Making Request: Heidar Malki   Telephone: 713-743-4075

Email: malki@uh.edu

Dean's Signature: Date: 9/13/2012

Course Number and Title: ELET 2300 – Introduction to C++ Programming

Please attach in separate documents:

☒ Completed CBM003 Add/Change Form with Catalog Description

☒ Syllabus

List the student learning outcomes for the course (Statements of what students will know and be able to do as a result of taking this course. See appended hints for constructing these statements):

Students will be able to: - demonstrate effective use of C++ programming, - develop interactive programs, - demonstrate knowledge of the fundamentals of C++ programming, control stetementments and loops, - apply knowledge of pointers, arrays, classes and files, - demonstrate ability to use Microsoft Visual Studio.Net compiler to develop and test computer programs.

Component Area for which the course is being proposed (check one):

*Note: If you check the Component Area Option, you would need to also check a Foundational Component Area.

☒ Communication	☐ American History
☒ Mathematics	☐ Government/Political Science
☐ Language, Philosophy, & Culture	☐ Social & Behavioral Science
☐ Creative Arts	☒ Component Area Option
☐ Life & Physical Sciences	

Competency areas addressed by the course (refer to appended chart for competencies that are required and optional in each component area):

☒ Critical Thinking   ☐ Teamwork

☒ Communication Skills   ☐ Social Responsibility

☐ Empirical & Quantitative Skills   ☐ Personal Responsibility

Because we will be assessing student learning outcomes across multiple core courses, assessments assigned in your course must include assessments of the core competencies. For each competency checked above, indicated the specific course assignment(s) which, when completed by students, will provide evidence of the competency. Provide detailed information, such as copies of the paper or project assignment, copies of individual test items, etc. A single assignment may be used to provide data for multiple competencies.

Critical Thinking:
Students are assessed by 1) two exams and 2) 6-7 programming assignments that are given to assess students' criticalthinking in solving mathematical reasoning and real world problems. For example students are asked to develop analgorithm to multiply two materices, add matrices, and find the minimum and maximum values in an array.

Communication Skills:
Students are required to provide written documentaion in the form of program comments that allow the user to understand the strcuture of the algorithm and its purpose.

Empirical & Quantitative Skills:
Students are required to develop algorithms to solve problems involving quantitative reasoning such as: 1) Develop a program to convert temperature from Celsius to Fahrenheit. 2) Develop a program to sort names in alphabetical order. This part of the 6-7 programming assignments required for the completion of the course.

Teamwork:
N/A

Social Responsibility:
N/A

Personal Responsibility:
N/A

Will the syllabus vary across multiple section of the course?   ☐ Yes   ☒ No

If yes, list the assignments that will be constant across sections:
N/A

Inclusion in the core is contingent upon the course being offered and taught at least once every other academic year. Courses will be reviewed for renewal every 5 years.

The department understands that instructors will be expected to provide student work and to participate in university-wide assessments of student work. This could include, but may not be limited to, designing instruments such as rubrics, and scoring work by students in this or other courses. In addition, instructors of core courses may be asked to include brief assessment activities in their course.

Dept. Signature: _____

THE UNIVERSITY OF HOUSTON
Engineering Technology Department

ELET 2300: Introduction to C++ Programming

COURSE SYLLABUS

ELET 2300: Introduction to C++ Programming

Required Course

CATALOG DESCRIPTION

Fundamentals of C++ programming, conditional and looping constructs, functions and function overloading, arrays, pointers and references, class concepts, and files. Emphasis on practical applications.

PREREQUISITES

Credit for or concurrent enrollment in MATH 1330.

REQUIRED TEXT and MATERIALS

- o A first Book of C++ from here to there, by Gary Bronsen, West Publishing Company
- o Lecture notes on Blackboard Learn.

COURSE LEARNING OUTCOMES and PERFORMANCE CRITERIA

Students will:

- o Demonstrate effective use of C++ programming
- o Develop interactive programs.
- o Demonstrate knowledge of the fundamentals of C++ programming, control statements, and loops.
- o Apply knowledge of pointers, arrays, classes, and files.
- o Demonstrate ability to use Microsoft Visual Studio.Net Compiler to develop and test the programs.

Performance of students is based on:

- o Completion and correctness of C++ home assignments, each focused on the unit taught in class;
- o Completion and correctness of two mid-term tests covering Units I-III and IV-VI, respectively; the written tests evaluates the knowledge of the syntactic and semantic basics of C++;
- o Completion and correctness of a comprehensive final exam, consisting in the implementation of a short C++ program based on given specification and with time constraints.

COURSE GRADING:

- Home works: 40% of the final grade

- Tests: 60% of the final grade, each (Midterm I, midterm II, Final Exam) counting 20%

RUBRICS

Each homework assignment covers a specific focus area consistent with the outlined course topics. These include: interactive input and formatted output, control structures, functions and variable scopes, arrays, pointers, file processing, and classes and data abstraction.

Homework is evaluated using a rubric consisting of five dimensions. Points are distributed in terms of how well students address each dimension in their assignment. A point total across the five dimensions results in an overall score. The five dimensions of the rubric include:

- *Documentation*: The student provides documentation in the form of program comments that describe how the program is supposed to run. Program comments should allow a different user to follow the logic and intent of the program syntax.
- *Debugging*: The student demonstrates the ability to appropriately troubleshoot and debug programs leading to increased functionality.
- *Correct Output*: The program is able to produce correct output which is consistent with the intent of the assignment.
- *Format Output*: Content output produced by the program is formatted in manner consistent with the expectations of the assignment.
- *Use of American National Standard Institute (ANSI) Rules*: Student demonstrates the appropriate use of C++ programming syntax and does not rely on other programming languages to complete the assignment task.

Student performance on exams is evaluated along dimensions that make up the four sections of the exams: factual knowledge, debugging skills, evaluation of program syntax, and program writing.

STUDENT OUTCOMES

Course-level outcomes for ELET 2300 address specific ETAC-ABET (Engineering Technology Accreditation Commission – Accreditation Board for Engineering and Technology) Criterion 3 Student Outcomes a, b, d, f, k and l. Student outcomes are program-level learning goals that describe what students should be able to do upon graduation. The student outcomes addressed by ELET 2300 include:

a.   An appropriate mastery of the knowledge, techniques, skills and modern tools of computer systems hardware and software.

b.   An ability to apply current knowledge and adapt to emerging applications of science, technology, engineering, and mathematics (STEM).

d.   An ability to apply creativity in the design of computer systems, components or processes in accordance with program educational objectives.

f.   An ability to identify, analyze and solve both hardware and software technical problems.

k.   A commitment to quality, timeliness and continuous improvement.

l.   The application of electric circuits, computer programming, associated software applications, analog and digital electronics, microcomputers, operating systems, and local area networks to the building, testing, operation, and maintenance of computer systems and associated software systems.

TOPICS COVERED

UNIT I.	The Fundamental of C++ Programming
UNIT II.	Interactive Input and Formatted Output
UNIT III.	Control Structures
UNIT IV.	Functions and Variable Scopes
UNIT V.	Arrays
UNIT VI.	Pointers (two weeks)
UNIT VII.	File Processing
UNIT VIII.	Classes and Data Abstraction

Successful completion of this course fulfills the technical content curricular requirements for the degree plan in Computer Engineering Technology.

STUDENTS WITH DISABILITIES

University of Houston provides, upon request, appropriate academic adjustments for qualified student with disabilities. Any student with a documented disability (Physical or cognitive) who requires academic accommodations should contact the center for students with DisABILITIES (713/743-5400) for assistance.

For detailed information, including documentation requirements, listings of available academic support services, test administration policies, parking accommodations/requirements, and more, please see The Center for Students with DisABILITIES web site.

The UH Academic Honesty Policy

High ethical standards are critical to the integrity of any institution, and bear directly on the ultimate value of your degree in the business community. All UH students, regardless of their chosen discipline, are expected to contribute to an atmosphere of the highest possible ethical standards.

Maintaining such an atmosphere requires that any instances of academic dishonesty be recognized and addressed. The UH Academic Honesty Policy is designed to handle those instances with fairness to all parties involved: the students, the instructors, and the University itself.

As a student of the University of Houston, you are responsible for being familiar with this policy. For further information, see:

- Honesty Policy FAQs for Students
- UH Student Handbook - Dean of Students download page

The official UH Academic Honesty Policy is published in the Undergraduate Studies Catalog.

ADDITIONAL INFORMATION ON UH STUDENT POLICIES

As a student of the University of Houston, the following information will be critical to you in insuring that your academic pursuits meet with success and that you encounter the fewest financial and academic difficulties possible. Please take a few moments to review the information located at:

http://www.uh.edu/provost/stu/stu_syllabsuppl/index.php.