

Memorandum of Understanding  
Articulation of ICS 111 and ICS 211 Courses

Background: The various departments of Computer Science or Information and Computer Sciences of the University of Hawai'i are already operating under an informal understanding concerning transfer of ICS 111 and 211 credits between UH Community Colleges, UH Hilo, and UH Manoa. This memorandum will confirm our agreement in writing so that students may proceed with a clear understanding of the conditions of transfer and confidence that the credits will transfer. It is our intention to obtain a formal articulation agreement; this MOU is a first step.

Terminology:

In this MOU,

"destination department" is the department to which credits are being transferred

"ICS111/CS150" corresponds to the Association for Computing Machinery's CS1 course. The UH Manoa version includes two courses described in the UHM catalog as follows (4 credits):

ICS 111, Introduction to Computer Science I (3 credits): Overview of computer science (algorithms, top-down design), writing programs (variables, conditionals, loops, arrays, objects/records, and methods/procedures). Prerequisites: ICS 101 or consent. Co-requisites: ICS 111L

ICS 111L, Introduction to Computer Science I Laboratory (1 credit): Programming exercises, demonstration and discussion of computer equipment, techniques, issues. Co-requisites: ICS 111.

The UH Hilo version is described in the UHH catalog as follows:

150 Introduction to Computer Science (3 credits) First course for computer science majors. A breadth-first introduction to the field of computer science touches on algorithms and their analysis, digital circuits, Boolean logic, computer architecture and languages, operating systems and theory of computing. Introduces algorithm design and computer programming using structured and object-oriented design techniques. Develops a foundation of basic knowledge and programming skills necessary for further study in the field. Co-requisite: Math 104 or Math 205.

"ICS111/CS150" corresponds to the Association for Computing Machinery's CS2 course. The UH Manoa version is described in the UHM catalog as follows:

ICS 211, Introduction to Computer Science II (3 credits): Algorithms and their complexity, introduction to software engineering, recursion, data structures (linked lists, queues, stacks, trees), searching and sorting algorithms. Prerequisites: ICS 111 (with A or B) and ICS 141 or concurrent, or consent

The UH Hilo version is described in the UHH catalog as follows:

151 Introduction to Software Development (3 credits)  
Continuation of CS 150. Recursion, dynamic memory allocation, sort/search, simple structured data types: strings, stacks, queues, lists, and trees. Program design, testing, and documentation. Pre: CS 150.

Agreement:

The Department of Information and Computer Sciences at UH Manoa, the Department of Computer Science at UH Hilo, and the UH Community Colleges will allow students to transfer ICS111/CS150 and ICS211/CS151 credits earned in each other's institutions provided that:

1. The student took both ICS111/CS150 and ICS211/CS151 using the same programming language.

(This requirement is to ensure that the student develops some depth in a given language. This requirement may be waived at the discretion of the destination department in special cases where the student can demonstrate prior programming experience of at least one year's duration in a single language.)

2. No more than one calendar year elapsed between taking ICS111/CS150 and ICS211/CS151.

(This requirement is intended to ensure continuity of programming experience. This requirement may also be waived at the discretion of the destination department.)

3. Grade requirements of the destination institution are met.

(For example, courses at ICS Manoa that have ICS211 as a prerequisite require that an A or B be earned in 211.)

4. In general, co-requisites such as ICS141 are not waived, with the exception being ICS111L. Specifically:

- a. Example of general rule: A student who is transferring ICS211/CS151 credits into ICS Manoa but has not taken ICS141 or equivalent must still take ICS141. It is not waived by virtue of being a co-requisite of ICS211.

b. Exception: A student transferring 3 credits of ICS111/CS150 without ICS111L or equivalent lab credit will not be required to take ICS111L in the destination department. If the destination department lists ICS111L as a graduating requirement, the student will be required to earn this credit towards graduation in another way.

Comments:

It is essential that all institutions maintain the same level of rigor in these courses, so that students who took them at one campus are prepared for more advanced courses at another campus. Towards this end, and to facilitate sharing of resources, an email discussion list is available for communication between all UH faculty across campuses who are teaching 111 and 211. It is [ics-111-211-faculty@hawaii.edu](mailto:ics-111-211-faculty@hawaii.edu). Subscription requests should be sent to [suthers@hawaii.edu](mailto:suthers@hawaii.edu).

We would like to develop a shared repository of digital materials for teaching 111 and 211. Funding for this repository should be sought within the university system. Discussion of the concept should take place in [ics-111-211-faculty@hawaii.edu](mailto:ics-111-211-faculty@hawaii.edu).

The Department of ICS currently teaches 111 and 211 in the Java programming language. Its use elsewhere is encouraged for the sake of students who wish to transfer into the Manoa program, but not required.