

# Authorized Academic Java Campus Application Form

## Section 1: **General Information and Goals**

### 1.1 *Institute information*

Institution Name:	University of California, Los Angeles (UCLA)
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### 1.2 *Current Java technology computing activities*

Java technology has been used to produce the products Wattsville (with Sun), SmartSchool, and IMED, among others.

### 1.3 *Current industry relationships*

The CDI has partnerships with McGraw-Hill, Hitachi, Sun Microsystems, Sony Corporation, and NTT (Nippon) among others.

### 1.4 *Current programs with other computer companies*

*Space Discovery*, with Hitachi; GTE Foundation funding for innovative multimedia research; *Intelligent Agents*, with Sony.

### 1.5 *Java Architect Academic Plan*

#### 1.5.1 *Curriculum design*

We have two courses existing, with content meeting the goals of the substantial parts of the Java Architect Curriculum. Development of more advanced courses is intended during the three-year period. See Appendix A.

### 1.5.2 *Course descriptions*

See Appendix A.

### 1.5.3 *Course sequence and prerequisites*

The present PIC 20 will become PIC 20A. The prerequisite is PIC 10A and 10B (both C++), although that could change in the future. A new course, PIC 20B, is being added, although taught the first time in Winter 2000 under a seminar number, PIC 197, with a prerequisite of PIC 20A. A third course is being designed to go along with the internship aspect of work with the CDI; the prerequisite will be PIC 20B. Of course, prerequisites are waived for students with advanced knowledge from other sources.

### 1.5.4 *Long term plans for Java in curriculum*

We have moved steadily towards the three-course sequence described. We have so many students interested in Java that the sequence should be sustainable in the long term.

### 1.5.5 *Validation* [no longer germane]

### 1.5.6 *Certificate*

Generally our students do not pursue certificates in programming language areas, but we shall certainly encourage students to do so.

### 1.5.7 *Degree program*

Our students are about one third in various Mathematics or Applied Mathematics majors, one third in Business-Econ, and one third in miscellaneous science majors. They are pursuing the Bachelor's degree.

Many students also take extra computing courses to fulfill the Specialization in Computing, which is an additional notation on the diploma, somewhat like a minor. Many of our Java students are pursuing a Specialization.

### 1.5.8 *Certification testing*

We have no plans to offer testing ourselves, but will assist students who are interested.

## 1.6: *Advanced Technology Services Plan*

### 1.6.1 *Services offered*

The Center for Digital Innovation (CDI) actively undertakes a variety of entrepreneurial projects both with other campus units and with external entities. With the advent of the AAJC and the increased expertise of students, we this activity will be expanded still further.

### 1.6.2 *Lab facilities*

While the CDI has some existing Sun equipment of its own, the proposed advanced teaching lab of Sun equipment will also be used for advanced technology services.

### 1.6.3 *Support staff*

The CDI has substantial support staff already, who would be paid from projects to which they contribute. (Additional staff support the teaching aspect.)

### 1.6.4 *Target markets and industries*

Distributed learning, multimedia, and E-learning of all kinds. It should be noted that the CDI seeks relationships with national and international entities as well as campus and local entities.

### 1.6.5 *Revenue goals*

The CDI is self-sustaining from revenues from projects, including royalties on software, to the order of \$1M per year.

## Section 2: **Operations Plan**

### 2.1 *Academic Goals*

#### 2.1.1 *Integration with the rest of the institute*

The Center for Digital Innovation (CDI) already represents a collaboration between a number of units on campus. Further, the proposed AAJC will be supported by courses offered in the UCLA Program in Computing, housed within the Mathematics Department. We expect to draw students from a variety of majors.

#### 2.1.2 *Working with Sun*

The CDI already has a relationship with Sun, which will be strengthened by the advent of the AAJC. At this writing we are not aware of other AAJC's

in this area, but if any develop we would be happy to collaborate on projects. We expect that Sun Microsystems will keep us informed of opportunities.

### 2.1.3 *Advisory Board*

Initially, the Advisory Board will be the same as the Advisory Board of the CDI, currently in the process of being established, which includes representatives from around the campus.

### 2.1.4 *Java Beans*

We do hope to contribute to JavaBeans component development and the repository initiative.

### 2.1.5 *Resources*

The introductory Java courses are currently taught using the large student laboratory of the Program in Computing. (See 2.1.7). For advanced work in Java, it is contemplated that a smaller laboratory under the auspices of the CDI will be developed, to include participation by Sun as part of the AAJC. Faculty teaching the introductory Java courses are those of the Program in Computing, with the support of the Dean of Physical Sciences. For advanced Java courses at an internship level, it is contemplated that students will work with selected staff of the CDI as instructors/mentors.

### 2.1.6 *Qualifications*

Qualifications of instructors are under the authority of the Academic Senate and are not to be part of the AAJC contract with Sun Microsystems. The Program in Computing (PIC) does have experienced Java instructors who are rated highly by students, and the CDI also has staff with a deep knowledge of Java. One PIC instructor and three CDI staff members are interested in obtaining certification.

### 2.1.7 *Lab facilities*

(a) *Hardware.* It is contemplated that a laboratory consisting of Sun equipment will be established under the auspices of the CDI, with some participation by Sun in conjunction with the AAJC. This laboratory will complement the teaching laboratory of the Program in Computing (PIC), which consists of Dell PC's, each with access to Sun servers. Although the PIC laboratory is larger than the proposed Sun laboratory, the fraction of its use for Java purposes is similar to the size of the proposed Sun laboratory, so that 50% of Java instructional equipment in use at any one time would be Sun equipment.

(b) *Software.* The new Sun lab portion will run Solaris. The existing PC laboratory runs under Windows NT and has Borland C++, MS Visual C++, and access to Sun servers via X-window emulation.

## *2.2 Advanced Technology Services goals*

The Center for Digital Innovation (CDI) already actively undertakes entrepreneurial projects both with other campus units and external entities. With the advent of the AAJC and the increased expertise of students, we hope to expand this activity still further.

### *2.2.1 Work with local industry*

As outlined, the CDI is eager to expand its work with industry. These contacts cannot be described as merely “local”, but rather as national and international.

### *2.2.2 Lab facilities, support, marketing, and consulting*

See 2.1.7 above for hardware and software. Some support personnel are already supplied through the Program in Computing; other personnel, hardware, and software either are currently available in the CDI. The Dean of Physical Sciences will assist in ensuring that adequate resources for the program are in place. The marketing plan is to continue the present CDI contacts while extending them with the assistance of publicity on Sun’s website. Consulting will involve students taking an advanced internship course.

### *2.2.3 Funding*

It is the responsibility of the Dean of Physical Sciences to allocate adequate resources for instruction taking place within the Division, as justified by student enrollments and programmatic considerations. The Dean is quite supportive of the AAJC project. In the short term, extra funding for new courses is indicated; in the longer term funding will be concomitant with the enrollments generated. There is some synergy from support personnel already available in both the Program in Computing and the CDI. The UCLA Administration will provide additional support in view of the campus-wide nature of the CDI.

## **Section 3: Minimum requirements**

### *3.1 Are you a government-recognized learning institute*

Yes, in the Constitution of the State of California.

### *3.2 Detailed plan for Java technology architect curriculum*

Yes; see Appendix A.

### *3.3 50% Sun systems in lab facilities to be used for the AAJC*

Yes, in the manner explained in 2.1.7(a). The teaching labs will serve the dual purpose of consulting.

### *3.4 Java technology as primary*

Yes, in the following manner. The CDI itself will treat Java as the primary object-oriented technology, using courses supplied by the Program in Computing. (The Program in Computing teaches introductory C++ as well, but the mix may change as Java becomes dominant in industry. The Computer Science Department also teaches introductory programming to Engineering students but is not part of this proposal.)

### *3.5 Is the faculty currently teaching Java technology courses or certification at the programmer or developer levels?*

Yes for courses at the programmer level and almost to the developer level, which is a fair description of our existing Java courses. No for certification; typically certification is more an emphasis of Community Colleges in California, rather than of the University of California. Nevertheless, we do hope that the AAJC program itself will serve to interest our best students in certification.

### *3.6 Do you already have an active program working with local industry to provide system analysis projects for students?*

Yes, in the sense that the CDI works actively with various industries on projects to which students could contribute. It is the purpose of the AAJC to develop a larger pool of students well qualified to participate in such projects..

## **Appendix A** *Courses*

### **1.** The existing PIC 20 (to be renumbered 20A)<sup>1</sup>:

Topics include:

Goals of Java; primitive data types; control flow; operations; arrays; classes in general; the null object; the static keyword.

Subclasses, superclasses; methods; constructors; the class hierarchy; access protection; wrapper classes; class design.

Graphics in Java, the Frame class and extensions; Applets, components; layout managers; mouse and button events; graphics state information; use of subclasses of components.

Threads; scheduling; thread groups.

Interfaces and their uses. Exception handling.

File I/O and streams; stream methods.

### **2.** PIC 20B (being established in the academic year 1999-2000):

Topics to include:

Further details on topics from 20A.

Images; color models; producers, consumers, and filters. Animation.

Data structures and their use.

Further issues in the design of web pages.

Java Beans API.

Additional topics such as Networking and Databases.

**3.** A third course, involving the CDI directly, will be instituted if the AAJC is established. It will involve student participation in actual CDI Java projects for clients.

**4.** Once these courses are under way, demand for further courses will be assessed.

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<sup>1</sup>At present, the prerequisite to PIC 20 is completion of two quarters of C++. This is why the 262 students taking Java this past year were so highly qualified; they were in the top third of all our programming students. In the spirit of the AAJC, we expect that our requirements will gravitate towards using Java as the introductory language as Java continues to supplant C++ in industry.