

The Pennsylvania State University
College of Information Sciences and Technology
IST 140 -
Introduction to Application Programming with Java
Spring 2016

Section 002: M-W-F 1:25 – 2:15 am 208 IST Building

Instructor

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Office hours: TBD

Tutoring

TBD

Course Web Site

We will be using the ANGEL course management systems.

Course Overview

This is a first course in programming principles for application development. The course will focus on application development foundations including: fundamental programming concepts; basic data types and data structures; problem solving using programming; basic testing and debugging; basic computer organization and architecture; and fundamentals of operations systems. This is a hands-on course designed to help students learn to program a practical application using modern, high-level languages.

Course Content

Programming Fundamentals

- Basic computer architecture
- The Java Environment
- Application Programming Interface (API)
- Compiled vs. interpreted programming languages, intermediate forms, object code
- Programming environments
- Variable declaration, assignment, and scope
- Operators and expressions
- Control structures: sequence, call/jump, conditional, iterative
- Simple input/output at the command line
- Functions (methods), parameter passing, pass-by-value vs. pass-by-reference
- Basic code documentation

Fundamental Data Types and Data Structures

- Type systems, strongly vs. weakly typed languages
- Primitive vs. reference types, promotion/demotion, casting
- One-dimensional arrays
- Records
- Abstract data types
- Strings and basic string processing
- Classes and objects
- Data representation in memory

Basic Problem Solving Approaches

- Convert simple practical problems into a programming problems
- Understand how algorithms fit into the problem-solving process
- Program some simple algorithms and understand how they work
- Structured decomposition, top-down design, modularity, programming with components

Basics of Testing and Debugging Programs

- Understand why debugging and testing are important
- Interpret and fix compile errors
- Interpret and fix runtime errors and understand runtime behavior
- Understand and use basic debugging statements and debugging tools
- Understand how to test units of code for known conditions

Course Objectives

At the conclusion of this course, students will be able to:

- Write, compile, and run basic procedural programs at the command-line.
- Understand, define, and use fundamental programming concepts.
- Understand, define, and use the elementary data structures.
- Understand, define, and use basic problem-solving approaches for application development.
- Understand, define, and use basic methods to test and debug programs.
- Understand and define basic computer organization, architecture, and operating systems principles at the application user/programmer level.

Required Course Text

Interactive E-text is available at zyBooks.com

Enter zyBook code **PSUIST140FisherSpring2016**.

Students can begin subscribing on 12/27/15.

The cost to subscribe is \$48; any applicable returning student discounts will be applied automatically.

The student subscriptions will be valid through 05/19/16.

Optional textbook:

In addition, there is an e-text version of Big Java Late Objects by Cay Horstmann that we will also be using. Here is the link:

Course Assignments

(the number of assignments might change slightly during the semester, but students will be notified)

Assignment types	Total Points
zyBook Interactive Activities	5%
Problem Sets	35%
In-Class Activities	5%
Quizzes	35%
Final	20%
TOTAL	100%

It is important to note that all review and programming assignments must be done by the student. I realize that there are numerous resources online to find the answers to your assignments, so be aware that each student may be asked to explain programming solutions turned in to the instructor. The instructor also reserves the right to decline assignments that contain suspicious code that appears to be work not completed by the student.

Late assignments will be assessed a 20% per day (or part thereof) late penalty. After 5 calendar days, we will assess for correctness (at your request) but no credit will be given.

Attendance

Attendance and participation are critical components of the course. Attendance is taken using the Angel PIN system. In order to receive full credit, you must demonstrate active and meaningful involvement in class activities. This requires that you attend classes and group meetings, be prepared, ask questions, and engage in discussions.

The following table defines the attendance policy for the course:

Up to 4 missed classes	No grade deduction
4-6 missed classes	Minus one grade fraction (eg A- becomes a B+)
7-9 missed classes	Minus one full grade (eg A- becomes a B-)
10-12 missed classes	Minus two full grades (eg A- becomes a C-)
More than 12 missed classes	Fail

Letter Grade	Percentage
A	93-100
A-	89-92.9
B+	86-88.9
B	83-85.9
B-	79-82.9
C+	76-78.9
C	70-75.9
D	60-69.9
F	0-59.9

For more general information about the emergency situation, please refer to: <http://www.psu.edu/PSUTXT> (<http://live.psu.edu/psutxt>). This is a service designed to alert the Penn State community via text messages to cell phones when situations arise on campus that affect the ability of the campus - students, faculty and staff - to function normally.

Course Schedule

This schedule is tentative and subject to change throughout the semester. Please check the course website (on ANGEL) for the most up-to-date schedule.

There are several links to videos on Lynda.psu.edu. This is a resource made available to you by Penn State and it contains an abundant amount of video tutorials. I have chosen several that relate directly to our content, so please be sure to check them out. When you go to the site, you must sign in with your psu user id and password!

Week	Topics
Week 1 1/11 – 1/15	Chapter 1: Overview of the course Computer Organization, Architecture, and OS Java, Programming Environments, Errors, and Algorithms Write your first program
Week 2 1/18 – 1/22 <i>(Note: No Monday class due to Holiday)</i>	Chapter 2: Fundamental Data Types Variables and Arithmetic Strings Input and Output
Week 3 1/25 – 1/29	Chapter 2 continued Problem solving: First do it by hand
Week 4 2/1 – 2/5	Chapter 6: Arrays and Array Lists
Week 5 2/8 – 2/12	Chapter 6 Continued
Week 6 2/15 – 2/19	Chapter 3: Decision Statements Comparisons Boolean data Testing Validating user input
Week 7 2/20 – 2/26	Chapter 3 continued
Week 8 2/29 – 3/4	Chapter 4: Loops Hand-trace the execution of a program Nested loops
3/7 – 3/11	Spring Break

Week 9 3/14 – 3/18	Chapter 4 Loops Cont'd
Week 10 3/21 – 3/25	Make-up
Week 11 3/28 – 4/1	Chapter 5: Methods Parameter passing Decomposing complex tasks into simpler ones Scope of a variable
Week 12 4/4 – 4/8	Chapter 5 continued
Week 13 4/11 – 4/15	Chapter 7: Input/Output and Exception Handling
Week 14 4/18 – 4/22	Chapter 7 continued
Week 15 4/25 – 4/29	Topic 10: Graphical User Interfaces (if time permits – this might be used for final exam preparation)

University Policy

Accommodating Disabilities

Penn State encourages academically qualified students with disabilities to participate in its educational programs. We are committed to equal opportunity in our admissions policies and procedures and are dedicated to providing reasonable accommodations for qualified students. Penn State students seeking special services or academic accommodations through Penn State must self-disclose their need for these services or accommodations to the World Campus or Penn State's Office for Disability Services (ODS). Contact Penn State's Office for Disability Services (ODS).

To be eligible for academic accommodations through ODS, students must have a documented Disability as defined by the Rehabilitation Act of 1973 or the Americans with Disabilities Act (ADA) of 1990. Learn more about the ODS eligibility requirements.

The University is responsible for making all its programs and services available to all students. The Office for Disability Services acts in an advisory capacity for all Penn State locations, including the World Campus. The World Campus will work with ODS to make reasonable academic adjustments or accommodations for eligible World Campus students.

Penn State's guidelines for appropriate documentation—and the verification forms necessary for each disability category—may be obtained from the "Documentation Guidelines and General Information for Students with Specific Conditions" section of the ODS Web site. For more information, contact ODS. Use of Trade Names Where trade names are used, no discrimination is intended and no endorsement by the World Campus, Outreach and Cooperative Extension, the College of IST, or The Pennsylvania State University is implied.

Disclaimer

Please note that the specifics of this Course Syllabus are subject to change, and you will be responsible for abiding by any such changes. Your instructor will notify you of any changes.

Special Flu Protocols

In compliance with Pennsylvania Department of Health and Centers for Disease Control recommendations, students should NOT attend class or any public gatherings while ill with influenza.

Students with flu symptoms will be asked to leave campus if possible and to return home during recovery. The illness and self-isolation period will usually be about a week. It is very important that individuals avoid spreading the flu to others.

Most students should be able to complete a successful semester despite a flu-induced absence.

Faculty will provide students who are absent because of illness with a reasonable opportunity to make up missed work. Ordinarily, it is inappropriate to substitute for the missed assignment the weighting of a semester's work that does not include the missed assignment or exam. Completion of all assignments and exams assures the greatest chance for students to develop heightened understanding and content mastery that is unavailable through the weighting process. The opportunity to complete all assignments and exams supports the university's desire to enable students to make responsible situational decisions, including the decision to avoid spreading a contagious virus to other students, staff, and faculty, without endangering their academic work. Students with the flu do not need to provide a physician's certification of illness. However, ill students should inform their teachers (but not through personal contact in which there is a risk of exposing others to the virus) as soon as possible that they are absent because of the flu. Likewise students should contact their instructors as quickly as possible to arrange to make up missed assignments or exams.

If you have questions about academic policy-related issues, please call the Associate Dean/Chief Academic Officer of your college. For health-related questions you can email Dr. Margaret Spear, director, University Health Services, at uhsinfo@sa.psu.edu.

In the event of a University-wide emergency:

Course requirements, classes, deadlines and grading schemes are subject to changes that may include alternative delivery methods, alternative methods of interaction with the instructor, class materials, and/or classmates, a revised attendance policy, and a revised semester calendar and/or grading scheme. In the case of a University-wide emergency, please refer to the following about changes in this course:

Appendix: Relevant Penn State Course Regulations:

1. Academic Integrity.

According to the Penn State Principles and University Code of Conduct: "Academic integrity is a basic guiding principle for all academic activity at Penn State University, allowing the pursuit of scholarly activity in an open, honest, and responsible manner. In accordance with the University's Code of Conduct, you must not engage in or tolerate academic dishonesty. This includes, but is not limited to cheating, plagiarism, fabrication of information or citations, facilitating acts of academic dishonesty by others, unauthorized possession of examinations, submitting work of another person, or work previously used without informing the instructor, or tampering with the academic work of other students. Any violation of academic integrity will be investigated, and where warranted, punitive action will be taken. For every incident when a penalty of any kind is assessed, a report must be filed."

You should know that I take academic integrity very seriously, and will fully adjudicate, with the IST Academic Integrity Review Board, any academic integrity violation I discover. If you are ever in question about an academic integrity issue, I strongly encourage you to discuss it with me.

2. Affirmative Action & Sexual Harassment.

“The Pennsylvania State University is committed to a policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by Commonwealth or Federal authorities. Penn State does not discriminate against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, or veteran status. Direct all inquiries to the Affirmative Action Office, 211 Willard Building.”

If you believe you are the victim of discrimination or sexual harassment, I want to know about it so that I can help you or direct you to someone else who can help you.

3. Americans with Disabilities Act.

“IST welcomes persons with disabilities to all of its classes, programs, and events. If you need accommodations, or have questions about access to buildings where IST activities are held, please contact us in advance of your participation or visit. If you need assistance during a class, program, or event, please contact the member of our staff or faculty in charge. Access to IST courses should be arranged by contacting the Office of Human Resources, 332 Information Sciences and Technology Building, (814) 865-8949. Recommended remedy. You may refer to the Nondiscrimination Policy in the *Student Guide to University Policies and Rules.*”

If you need special accommodations for any class activity due to a disability, please let me know in advance so we can work something out. I can also refer you to people in IST or in the Penn State Disabilities office who can help.

4. Class Attendance.

Class attendance is governed by Penn State Faculty Senate Rule 42-47 - <http://senate.psu.edu/policies/42-00.html#42-27>

“The faculty, staff, and other resources of the University are furnished for the education of students who attend the University. A class schedule is provided for students and faculty so that a reasonably orderly arrangement for instruction is facilitated. The fact that classes are scheduled is evidence that the faculty believes class instruction is important. Therefore, class attendance is important for the benefit of students. Accordingly, it is the policy of the University that class attendance by students be encouraged and that all instructors organize and conduct their courses with this policy in mind. A student should attend every class for which the student is scheduled and should be held responsible for all work covered in the courses taken. In each case, the instructor should decide when the class absence constitutes a danger to the student's scholastic attainment and should make this fact known to the student at once. A student whose irregular attendance causes him or her, in the judgment of the instructor, to become deficient scholastically, may run the risk of receiving a failing grade or receiving a lower grade than the student might have secured had the student been in regular attendance.

Instructors should provide, within reason, opportunity to make up work for students who miss class for regularly scheduled, University-approved curricular and extracurricular activities (such as Martin Luther King Day of Service, field trips, debate trips, choir trips, and athletic contests). However, if such scheduled trips are considered by the instructor to be hurting the student's scholastic performance, the instructor should present such evidence for necessary action to the head of the department in which the course is offered and to the dean of the college in which the student is enrolled or to the Division of Undergraduate Studies if the student is enrolled in that division.

Instructors also should provide, within reason, opportunity to make up work for student's who miss classes for other legitimate but unavoidable reasons. Legitimate, unavoidable reasons are those such as illness, injury, family emergency, or religious observance. If an evaluative event will be missed due to an unavoidable absence, the student should contact the instructor as soon as the unavoidable absence is known to discuss ways to make up the work. An instructor might not consider an unavoidable absence legitimate if the student does not contact the instructor before the evaluative event. Students will be held responsible for using only legitimate, unavoidable reasons for requesting a make-up in the event of a missed class or

evaluative event. Requests for missing class or an evaluative event due to reasons that are based on false claims may be considered violations of the policy on Academic Integrity (Policy 49-20).”

5. **Excused Absences.** Excused absences are governed by Faculty Senate Policy E-11 - <http://www.psu.edu/oue/aappm/E-11.html> - “Senate Policy 42-27 Class Attendance recognizes that on occasion, students may opt to miss a class meeting in order to participate in a regularly scheduled university-approved curricular or extracurricular activity, or due to unavoidable or other legitimate circumstances such as illness, injury, family emergency, or religious observance.

Procedure:

1. Students who will miss a class in accordance with Senate Policy 42-27, should, where appropriate, present a [class absence form](#) to the faculty member as soon as possible and, except in unavoidable situations, at least one week in advance of a planned absence. In the case of illness, students are not required to secure the signature of medical personnel.

Students should be provided with a reasonable opportunity to make up missed work. Ordinarily, it is inappropriate to substitute for the missed assignment the weighting of a semester's work that does not include the missed assignment. Completion of all assignments assures the greatest chance for students to develop heightened understanding and content mastery that is unavailable through the weighting process. The opportunity to complete all assignments supports the university's desire to enable students to make responsible situational decisions without endangering their academic work.

2. If an instructor believes a requested absence for such events will harm a student scholastically, the instructor should present evidence for necessary action to the head of the department in which the course is offered and inform the assistant/associate dean of the college in which the student is enrolled, or to the Division of Undergraduate Studies if the student is so enrolled.
3. Students who believe they have been unfairly denied a make-up opportunity should, after trying to resolve the problem with the course instructor, contact the head of the department for the course in which the student is enrolled.
4. If the problem is not resolved, the student should contact the sponsoring agency or university department (in some instances, this may be the student's college assistant/associate dean for undergraduate programs or the student's campus academic officer) and provide documentation describing the unresolved make-up opportunity. The sponsoring agency or university department should attempt to resolve the problem.
5. If the problem is still unresolved, the sponsoring agency or university department should forward the documentation to the Vice President and Dean for Undergraduate Education for resolution.
6. False claims of legitimate or unavoidable absence may be considered academic integrity violations (Senate Policy 49-20, AAPP G-9).

Note: As of Fall 2002, University Health Services (UHS) no longer provides verification of illness forms for minor illnesses or injuries. Verification will be provided only for serious illnesses for which UHS clinicians provided services, or when UHS has received such documentation from outside providers.

6. **Extended Absences.** Policy E-11 above provides that verification of minor illnesses is not necessary. However, for extended absences due to things like illness or other personal emergency, instructors may require documentation which may be obtained using this procedure, which may be viewed here - <http://studentaffairs.psu.edu/health/welcome/illnessVerification/> :

“Policy for Verification of Illness

University Health Services (UHS) does not provide verification of illness forms for minor or routine illnesses or injuries. UHS may provide verification of illness forms for significant prolonged illnesses or injuries resulting in absence from classes.

Routine Illness

A routine illness would be a minor illness or injury, such as colds, and flu-like or self-limited gastrointestinal illnesses. For routine illness-related absences, students should correspond directly with the faculty as soon as possible regarding their situation, ideally before they miss a class, exam, or other evaluative activity.

Significant, Prolonged Illness

A significant, prolonged illness is a serious illness or injury lasting at least a week. Medical documentation is required, either from UHS clinicians or outside clinicians. When appropriate, students may request the verification during their UHS clinician visit or send a secure message to their clinician or the Advice Nurse through [myUHS](#). If students have received care from an outside provider for a significant, prolonged illness, they must provide appropriate documentation to the UHS Director, 502A Student Health Center, 814.865.6555.”

Additional Course Regulations and Instructions:

Throughout the semester, additional course instructions may be posted to ANGEL. If you take this course, you are expected to read, understand, and comply with these.