



Department of Information Sciences and Technology

Course Syllabus

IT 196 - Review of IT Problem Solving Using Computer Programming

revised 02.04.2019

Catalog Description

Provides a self-paced, comprehensive review of techniques for developing solutions to business problems through a structured, iterative design and development approach. Open only to students with transfer credit comparable to IT 106 who have not attempted IT 106 or IT 196.

Prerequisites

Permission of department. Students must have transferred a course comparable to IT 106 in order to be eligible to register for this course. For VCCS students, this course is typically ITP 120.

This requirement will be **strictly enforced**. Any student who does not meet the prerequisite requirement will not be permitted to enroll in the course.

Important Advising Note: Students may find this course to be very challenging! This course assumes the majority of the course content is already known and only a refresher is needed. Only students with a **solid** foundation of the content covered in IT 106 should attempt to complete this course. This course is not intended to replace the full content and experience gained from completing IT 106. Students should consult with the instructor if they are unsure if they should register for this course or for IT 106.

Rationale

Problem solving and programming are essential skills for all IT students and IT professionals. Understanding how a computer is instructed to accomplish tasks leads to an appreciation of the underlying concepts of the Information Technology discipline. Learning how to solve a problem using a structured programming language provides a strong foundation that will be used in higher level IT courses.

This course provides a pathway for students that have previously taken a course comparable to IT 106, but were denied direct equivalency to IT 106 to review materials and reinforce what was learned in the prior

course. From this learning they should be able to demonstrate a level of proficiency equivalent to students completing IT 106 which will prepare the student for higher level IT courses.

Course Outcomes

1. Utilize primitive data types and built-in data structures.
2. Use procedural programming techniques effectively and efficiently (including expressions, decisions, repetition structures, methods, parameters, arrays and variable scope).

Supported Student Outcomes at the Program Level

- (a) Apply knowledge of computing and mathematics
- (c) Design, implement and evaluate a computer-based system, process, component, or program
- (j) Ability to use and apply current technical concepts and practices in the core information technologies

Major Topics

On successful completion of this course, students will be able to:

- Discuss the importance of algorithms in the problem-solving process.
- Identify the necessary properties of good algorithms.
- Create algorithms for solving simple problems.
- Use a programming language to implement, test, and debug algorithms for solving problems.
- Define and use data of both primitive and reference types effectively.
- Create and use simple and complex static data structures.
- Design solutions to problems using procedural techniques.
- Decide on an appropriate repetition and/or selection structures for given problems.
- Apply the techniques of structured (functional) decomposition to break a program into smaller pieces.
- Describe the mechanics of parameter passing and the issues associated with scoping.
- Apply effective debugging strategies.

Textbooks



**** BOTH TEXTBOOKS ARE REQUIRED ****

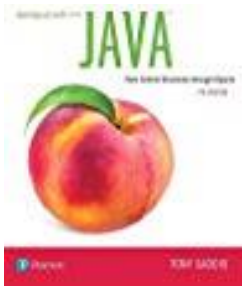
Simple Program Design, A Step-by-Step Approach, 5th Edition

By: Lesley Anne Robertson

Publisher: Course Technology

Publication Date: September 29, 2006

ISBN: 978-1-4239-0132-7



**** BOTH TEXTBOOKS ARE REQUIRED ****

Starting Out with Java: From Control Structures through Objects, 7th Edition

By: Tony Gaddis

Publisher: Pearson, Inc.

Publication Date: February 26, 2018

ISBN: 978-0134802213

Administrative Support

Fairfax Campus

Nguyen Engineering Building, Room 5400

Phone: 703-993-3565

Science and Technology Campus

Bull Run Hall, Suite 102

Phone: 703-993-8461

For a map and directions, visit: <http://maps-directions.gmu.edu/>

Grading

Grades will be awarded in accordance with the GMU Grading System for undergraduate students. See the university catalog for policies: <http://catalog.gmu.edu> for more information.

The grading scale for this course is:

98-100%	A+	92-97%	A	90-91%	A-
88-89%	B+	82-87%	B	80-81%	B-
78-79%	C+	72-77%	C	70-71%	C-
60-69%	D	0-59%	F		

- **Majors**

- *For IT majors pursuing the Information Technology Entrepreneurship (ITE) concentration and have a catalog year of Fall 2016 or later*
 - A grade of “B” or better is required in this course to declare the concentration and take ITE concentration courses.
- *For all other IT majors*
 - A grade of “C” or better is required in this course because it is a prerequisite for other courses in the program.

- **Minors**

- *For IT minors who have a catalog year of Fall 2018 or later or who wish to take additional courses where this course is a prerequisite*
 - A grade of “C” or better is required in this course to count against IT minor requirements and to take follow-on courses where this course is a prerequisite
- *For all other IT minors*
 - A grade of “D” or better is required in this course for it to count towards the minor/undergraduate certificate, provided that you will not be taking any other courses for which this course is a prerequisite.
- If you do not fall into any of the above categories, you should refer to the University Catalog, or see an advisor for minimum grade requirements.

Raw scores may be adjusted by the instructor to calculate final grades. Final grades will be determined based on the following components:

Graded Activity	Weight
In-Class Quizzes	20%
In-Class Lab Assessments	40%
Final Exam	40%

There are no extra credit opportunities. Students may not do additional work nor resubmit any graded activity to raise a final grade.

The final exam will be conducted on-campus, in a classroom. You must be available during this day/time to take the exam. The exam will be written and “closed book, closed notes, closed friends” – no reference materials other than those provided with the exam will be permitted. Exams are retained by the IST department and will not be returned to students.

Final grades will be posted to PatriotWeb, which is the only vehicle for students to obtain those grades. A student with a "hold" on his/her PatriotWeb account will be unable to access final grades until the hold has been removed by the Registrar.

Course Content/Schedule

Readings and Practice Labs are expected to be completed **prior to** the class session to be successful on the graded assessments.

Module	Content	Read/Practice SPD: Simple Program Design SOWJ: Starting Out with Java	In-Class Graded Assessments
1 (6/24)	<ul style="list-style-type: none"> • Introduction to Problem Solving, Java, and Algorithms and Pseudocode • Developing Algorithms / Variables and Data Types • Selection Control Structures 	SPD: Ch. 1, 2, 3, 4 SOWJ: Ch. 1, 2, 3 Practice Labs: 1, 2, 3, and 4	<ul style="list-style-type: none"> • Quiz 1 • Lab 1
2 (7/1)	<ul style="list-style-type: none"> • Repetition Control Structures • Algorithms Using Sequence, Selection, and Repetition 	SPD: Ch. 5, 6 SOWJ: Ch. 4 (except 4.10) Practice Labs: 5, 6	<ul style="list-style-type: none"> • Quiz 2 • Lab 2
3 (7/8)	<ul style="list-style-type: none"> • One-Dimensional Arrays • Parallel and Multi-Dimensional Arrays 	SPD: Ch. 7 SOWJ: Ch. 7.1-7.2, 7.4, 7.6, 7.8, 7.9, 7.10 Practice Labs 7, 12	<ul style="list-style-type: none"> • Quiz 3 • Lab 3
4 (7/15)	<ul style="list-style-type: none"> • Modular Problem Solving/Methods • Method Parameters & Variable Scope • Arrays and Methods 	SPD: Ch. 8, 9, 10 SOWJ: Ch. 5, 7.3, 7.5 Practice Labs 8, 9, 10, 11	<ul style="list-style-type: none"> • Quiz 4 • Lab 4
5 (7/22)	<ul style="list-style-type: none"> • Final Exam 	Practice Labs 13, 14	<ul style="list-style-type: none"> • Final Exam

During Modules 1 through 4, the following schedule will be adhered to:

5:30pm – 5:50pm – Graded Assessment: Quiz

5:50pm – 6:35pm – Content Review/Q&A from Module Reading

6:35pm – 6:45pm – Break

6:45pm – 8:00pm – Graded Assessment: Lab

Important Dates

Dates for adding, dropping the course, etc. are available via: <http://registrar.gmu.edu>.

Religious Holidays

A list of religious holidays is available on the [University Life Calendar page](#). Any student whose religious observance conflicts with a scheduled course activity must contact the instructor **at least 2 weeks in advance** of the conflict date in order to make alternative arrangements.

Attendance Policy

Students are expected to attend all class meetings and be prepared for graded assessments, unless there are compelling, severe circumstances supported by appropriate documentation requiring an excused absence (i.e. illness, death, etc.). **Excessive area traffic, work obligations, and parking trouble are not valid reasons to arrive late.** Except in such circumstances, failure to be present for graded assessments, on-time, will result in a score of zero (0) for the graded assessment(s) without an option for a makeup. For excused absences, the instructor will replace the grade of the missed assessment(s) with the grade of the next assessment(s).

For the final exam, departmental policy requires students to take exams at the scheduled time and place, unless there are compelling, severe circumstances supported by appropriate documentation. Except in such circumstances, failure to arrive to the exam site on time for a scheduled exam will result in a score of zero (0) for that exam, in accordance with [Mason policy on final exams](#). **Excessive area traffic, work obligations, and parking trouble are not valid reasons to arrive late. Students must not make travel plans or other discretionary arrangements that conflict with scheduled classes or the FULL final exam period listed on the Registrar's Web site.** If the University is closed due to weather or other unforeseen conditions, classes or exams may be rescheduled at another day and time during the exam period.

Communications

Registered students will be given access to a section of the [Blackboard Learning System](#) for this course. Blackboard will be used as the primary mechanism to disseminate course information, including announcements, lecture slides, and grades.

Communication with the instructor on issues relating to the individual student should be conducted using Blackboard Mail, GMU email, via telephone, or in person - **not** in the public forums on Blackboard. GMU Mail is the preferred method – for urgent messages, you should also attempt to contact the instructor via telephone. Federal privacy law and GMU policy require that any communication with a student related in any way to a student's status be conducted using secure GMU systems – if you use email to communicate with the instructor you **MUST** send messages from your GMU email account.

Privacy

Instructors respect and protect the privacy of information related to individual students. As described above, issues relating to an individual student will be discussed via email, telephone or in person. Instructors will not discuss issues relating to an individual student with other students (or anyone without a need to know) without prior permission of the student.

Faculty and staff will take care to protect the privacy of each student's scores and grades.

Disability Accommodations

[The Office of Disability Services \(ODS\)](#) works with disabled students to arrange for appropriate accommodations to ensure equal access to university services. Any student with a disability of any kind is strongly encouraged to register with ODS as soon as possible and take advantage of the services offered.

Accommodations for disabled students **must** be made in advance – ODS cannot assist students retroactively, and at least one week's notice is required for special accommodations related to exams. Any student who needs accommodation should contact the instructor during the first week of the semester so the sufficient time is allowed to make arrangements.

Honor Code

All members of the Mason community are expected to uphold the principles of scholarly ethics. Similarly, graduating students are bound by the ethical requirements of the professional communities they join. The ethics requirements for some of the communities relevant to Applied IT graduates are available via the following links:

- [ACM Code of Ethics and Professional Conduct](#)
- [IEEE Code of Ethics](#)
- [EC-Council Code of Ethics](#)

On admission to Mason, students agree to comply with the requirements of the [GMU Honor System and Code](#). The Honor Code will be **rigorously** enforced in this course. The instructor will use several manual and automated means to detect cheating and/or plagiarism in any work submitted by students for this course, and to direct teaching assistants and/or other faculty and/or staff members to do likewise in support of this course.

For this course, the following additional requirements are specified:

- All work that is to be submitted for a grade must be prepared by the individual student. Students are expressly prohibited from sharing any work that is to be submitted for a grade for this course in any manner with anyone other than the instructor and teaching assistant(s) assigned to this course and the student's section).
- Students may not post or share course content (i.e. instructor provided lecture notes, assignment directions, assignment questions, or anything not created solely by the student), using any non-electronic or electronic medium (i.e. web site, FTP site, any location where it is accessible to someone other than the individual student, instructor and/or teaching assistant(s)). Such action constitutes copyright infringement and is strictly prohibited without prior approval from the instructor.

If you have questions on these requirements, please discuss them with your instructor. Any deviation from these requirements is considered a violation of the Honor Code. All suspected violations of the Honor Code will be taken seriously and are required to be reported by the instructor.