

COURSE EXPECTATIONS & RUBRICS

1. GRADES

1.1. **Attitude.** I do not *give* grades for intelligence or effort, you *earn* grades for demonstrating excellence. Grades relate to performance, not you, so do not take them personally.

Intelligence: Neither necessary, nor sufficient. If you are smart, excellent work seems effortless, but will not excuse you from avoiding it.

Effort: Necessary, but not sufficient. Working hard helps, as does working efficiently.

1.2. **Excellence.** To achieve excellence, all of these are necessary and sufficient:

Motivation: Are you willing to practice and learn?

Criticality: Can you point out and correct mistakes?

Time: Do you have enough time?

1.3. **Submissions.** To get practice, timely feedback and combat plagiarism, you will:

On-line: Submit all work on-line.

Feedback: Grade your work and two other submissions at class meetings.

Public: Be able to see all other student submissions.

Choice: Bid on a choice of assignments.

Assignment: Not work on the same thing as any other student or team.

Revisions: Submit revised work during class meetings to approach excellence.

Improvement: Be able to revise your work to attain full credit.

1.4. **Quality.** When grading, keep the following in mind:

Excellent: (A) Performance is not only satisfactory, it goes above and beyond.

Satisfactory: (B) Performance demonstrates mastery of learning objectives.

Needs Improvement: (D) Performance has deficiencies to address.

Unsatisfactory: (F) No performance.

1.5. **Posting.** Since you will grade your work (*estimate*), I will post (*actual – estimate*) on-line with a secret key. Compute your grade as follows: (*post + estimate*). Make accurate estimates, as we will grade the grades.

2. RUBRICS

The nice thing about standards is that you have so many to choose from.

— *Andrew S. Tannenbaum*

These rubrics represent the standards for excellence I expect for all of us, myself included.

- 2.1. **Rubrics.** Communicate expectations by setting standards for excellence, not effort.
Criteria: Independent dimensions of judgement.
Levels: A rating scale for each criterion.
Descriptors: Model standards of excellence for each criterion and level.
- 2.2. **Source code.** Communicates to a compiler, other programmers, and end users.
Syntax: The compiler checks if the language grammar accepts the source code.
Schematics: Other programmers expect source code to follow conventions.
Semantics: End users care about what the program does and how it works.
- 2.3. **Software tests.** Specify behavior and establish confidence in implementation.
Specification: Tests define how a program should (and should not) behave.
Coverage: Tests exercise program elements, thereby establishing confidence.
- 2.4. **Writing.** Convey points, clarify thought, avoiding errors and verbosity.
Point: Writing must convey points with relevant evidence.
Style: Writing must avoid errors, verbosity.
Organization: Sentence, paragraph and section structures must clarify thought.
- 2.5. **Presentations.** Demonstrate knowledge and engage the audience.
Knowledge: The presenter must convey knowledge so the audience learns.
Technique: The presenter must engage the audience.
- 2.6. **Questions.** Probe productively.
- 2.7. **Grades.** Assess the quality of work using evidence and criteria.
Fairness: Assessments of quality reflect reality.
Feedback: Assessments provide actionable feedback, without giving away solutions.
Reliability: Independent graders arrive at similar quality assessments.
- 2.8. **Participation.** Engage during class meetings, do not merely show up.
Attendance: Show up to class meetings, or justify absence.
Engagement: Engage during class meetings.
- 2.9. **Lessons.** Teach with objectives and assessments.
Learning objectives: Made first, manageable, measurable, and important.
Assessments: Rank student progress appropriate to learning objective.

TABLE 1. Rubric rubric

Criterion	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
Criteria				
Rubric lists ...	Irrelevant criteria or no criteria	Overlapping, partial, conflicting criteria	Distinct, complete, relevant, consistent criteria	Satisfactory criteria enabling rapid grading
Levels				
Rubric ...	Omits levels	Defines perfection only	Sorts imperfection and perfection into levels	Sorts with objective metrics & evidence
Descriptors				
Rubric ...	Omits descriptors	Describes criteria and levels with adjectives	Describes criteria and levels with sentences	Demonstrates using sentences & example(s)

TABLE 2. Source code rubric

Criterion	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
Syntax				
Code ...	Does not compile	Compiles with warnings	Compiles, no warnings	Uses safe constructs
Schematics				
Code is ...	An empty shell	Structured poorly	Structured well	Attentive to detail
Indentation ...		Is sloppy or absent	Highlights structure	Is spaced consistently
Cohesion is ...		Low	High	High
Coupling is ...		Tight	Loose	Loose
Structured as ...		Duplicated or dead code	All code has a purpose	Delegation to libraries
Methods are ...		Excessively long	Short (fit one screen)	One-liners
Identifiers ...		Mislead or are useless	Convey meaning	Obey conventions
Comments ...		Omitted or restate code	Explain why	Input to doc generator
Semantics				
Specification is ...	Irrelevant, absent	A problem number	A problem statement	Augmented, exceeded
Program runs ...	Not at all	Partially, incorrectly	To specification	Beyond specifications
Missing ...	All cases	Edge or corner cases	No specified cases	No case whatsoever
Input prompts ...		Confuse, are ambiguous	Reveal expectations	Prevent errors
Performance is ...		Slow	Fast	A live interaction
Program ...		Delegates work to users	Performs tasks for user	Minimizes user work
Outputs have ...		No labels or structure	Labels and structure	Good labels, structure

TABLE 3. Testing rubric

Criterion	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
Specification				
Tests assert ...	Nothing	Program behavior	Behavior & exceptions	Behavior, exceptions Nonfunctional qualities
Tests are ...	Non-existent	Positive, specific	Positive, negative & specific	Positive, negative & generic
Coverage				
Tests cover ...	Nothing	Methods (units)	Statements	Conditions & decisions
Tests exercise ...	Nothing	≥ 60% of above	≥ 80% of above	≥ 90% of above

TABLE 4. Writing rubric

Criterion	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
Point				
Topic sentence...	Is irrelevant	Does not give a topic	Summarizes paragraph	Makes a point
Evidence is ...	Non-existent	Equivocation: <i>very, quite</i>	Assertions of topic	Topical citations, proofs
Style				
Words ...	Are bogus: <i>refudiate</i>	Are misspelled or unfit: <i>then/than, its/it's</i>	Are spelled correctly & proper for context	Replace phrases
Sentences are ...	Partial & passive	Ill-formed, long, passive	Grammatical, active	Concise in active voice
Tense is ...	Unfit to context	Mixed inconsistently	Consistent with context	Consistent throughout
Organization				
Sentences have...	No form (notes)	Duplicate words	Unique words	Varied structure
Sequenced in ...	No logical order	Choppy groups	A logical progression	A flowing narrative

TABLE 5. Presentation rubric. Use writing rubric for presentation content.

Criterion	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
Knowledge				
Explanations ...	Make no citations	Partially cover concepts	Are accurate, complete	Cite relevant work
Answers ...	No questions	Easy questions only	Most questions in detail	All questions in detail
Audience ...	Learns nothing	Gains little knowledge	Gains knowledge	Understands material
Technique				
Visual aids are...	Absent or useless	Bullet points only	Relevant images, media	Explanatory & reinforce
Eyes on ...	Reading slides	Reading notes	Audience & notes	Audience only
Speech is ...	Mumbling, quiet	Low, mispronouncing	Clear, heard by most	Precise, articulate
Cultivates ...	No motivation	Extrinsic motivation	Positive motivation	Intrinsic motivation
Activities are ...	Omitted	Answering questions	Completing exercises	Evaluating exercises

TABLE 6. Question rubric

Criterion	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
Asks for ...	Nothing relevant	Information in textbook	Detail, clarification	Basis: What, why, how
What it asks is:	Hazy, in question	Closed-ended: <i>yes or no</i>	Open-ended	Evident from question
Asks to ...	Distract	Gain knowledge	Grasp, apply concepts	Analyze, create, judge

TABLE 7. Grading rubric

Criterion	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
Fairness				
Levels fit work...	For no criteria	For one criterion	For most criteria	For all criteria
Feedback				
Feedback ...	Overlooks flaws	Mentions flaws vaguely	Cites specific flaws	Ties flaws to rubric
Feedback ...	Reveals solution	Outlines solution	Gives advice, hints	Cites learning outcomes
Reliability				
Grader ...	Differs from peers	Agrees on one criterion	Makes similar marks	Arrives at same grade

TABLE 8. Participation rubric

Criterion	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
Attendance				
Absence is...	Unexcused	Justified retroactively	Justified in advance	Justified with evidence
Arrives ...	Not at all	Late	On-time	Early
Engagement				
Participant ...	Evades, disrupts	Is passive	Asks, answers questions	Leads discussion
Participant ...	Has head on desk	Slouches	Is upright, nods	Tracks the speaker
Participant ...	Asks nothing	Asks for nothing	Asks for extra material	Cites or makes extras
Answers ...	"I don't know"	Are guesses	Correctly	Cite processes, evidence
Critiques ...	Not at all	Erroneously	Make valid points	Reveal flaws in material
Discussion ...	Veers to tangents	Avoided	Remains on topic	Organizes, elaborates

TABLE 9. Lesson rubric

Criterion	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
Learning objectives				
Objectives are ...	Absent	Mentioned in passing	Posted in advance	Posted and referenced
Objectives are ...		Unimportant	Useful	Necessary for future
Lesson covers ...		One objective partially	One objective fully	Many objectives fully
Assessed ...		In exams only	In exams, assignments	By end of class meeting
Assessments				
Measures are ...	Absent, irrelevant	Subjective	Documented as rubric	Clear
Measures ...		Relate to objective	Fit learning objective	Rank students' learning