CS-JEDI Sustainable Implementation Plan

Motivation. CS-JEDI can benefit our community under the following key conditions:
- The course remains high-quality and identity-safe for students
- It can evolve positively in response to student feedback
- Student instructors are protected, well-prepared to teach, well-supported, and compensated for their labor.

This document. This document describes our procedures for implementing CS-JEDI sustainably in a PhD program, so that it can change hands over time while meeting the above standards. *External documents are denoted in blue.*

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A. Course Instruction Plan

A1. Recommended Instruction Team

We recommend the course be jointly led by one faculty member and two PhD students.

Role of student instructors. The PhD students are the primary instructors: they lead the class, manage course logistics, grade assignments, and serve as moderators in small-group discussion when necessary or desired.

Role of faculty instructor. Students and faculty instructors can collectively agree upon how they want to divide the work and responsibility. However, in the model that has worked so far in CSD, the role of the faculty instructor primarily entails (1) helping students navigate CMU administrative details associated with teaching a course, (2) enforcing departmental and course policies, (3) help resolve any issues the student instructors do not feel comfortable handling, and (4) otherwise supporting the student instructors upon request.

Motivation: The motivation for students taking a central role in teaching the course (rather than faculty) is to acknowledge and alleviate the power dynamics that exist between faculty and students, which could lead to students being less comfortable sharing views and experiences in class. Having the student instructors primarily in charge can also be a valuable asset to a PhD training program, giving interested students hands-on experience with both DEI and teaching. It is important that two students co-teach the class (rather than one) for the purposes of mutual support and accountability.

A note about power dynamics: An important challenge to be aware of here is that, while there are significant benefits (as described above) of having PhD students acting as the primary instructors of this course, this also places the student instructors in the difficult position of managing two conflicting power dynamics: while in the CS-JEDI context they are instructors, they are themselves PhD students, and so they are in the broader context peers of the students.

Additional instructional support: For the purposes of sustainability (i.e., consistently being able to find instructors), the course is designed to be teachable by CS PhD students and CS faculty, who may have not been formally educated in DEI (though it is strongly recommended that the student instructors are chosen from among students who have previously taken CS-JEDI). It is important, then, for the core instructors to be supported by two types of expert consultants:

(1) a curriculum expert. This is someone who is experienced with building inclusive curriculum, who can consult with the instructors on how to adjust materials in response to feedback and navigate instructional challenges.

(2) A DEI expert, who can consult on handling sensitive issues that arise. This can be any campus leader in DEI (e.g., a staff member who is appointed for the purposes of DEI, someone at the center for diversity or equivalent office…)

Ideally, these consultants would be consistent across semesters so they build a longer-term understanding of the course.

A2. Tenure and Compensation of Instructors

Each **student instructor** will co-teach the class for two successive semesters. Pairs of student instructors are interleaved, so that at any given semester, one student has already taught the class, and the other student can learn from them, *ad infinitum*. In CSD, teaching the course twice counts as one full semester of TAing (as two iterations of CS-JEDI amounts to 12 weeks of teaching), for which student instructors are funded / have educational requirements satisfied according to department standards.

The **faculty instructor** should ideally be consistent year-to-year. This consistency has multiple benefits: first, given that the student instructors turn over quickly, the faculty instructor can offer a longer-term perspective on the course. This also means the faculty instructor will be up-to-speed quickly, which is necessary in order for them to sufficiently support the student instructors.

A3. Training and support of Instructors

Throughout teaching, instructors are supported by the *Teaching Manual*, which provides documentation on all course procedures (both instructional and administrative), along with a checklist to ensure that the major steps are completed at the correct times.

Prior to teaching the course, instructors take a 2-hour *Instructor Training,* developed jointly by the CMU Eberly Center for Teaching and Learning and the original course instructors. These training materials are formatted and sufficiently documented to work in the "train-the-trainer" model, so that someone who has taken the training once before can, with ~1 hour of preparation, give the training to the new instructor. Because the instructors are interleaved, there will always be an incoming instructor who has taken the training once before. We recommend that all instructors (including the faculty instructor) participate in this training.

A4. Recruitment and Selection of Student Instructors

Per the interleaved structure described above, **one new student instructor must be recruited each year**. The current instructors are responsible for recruiting the new instructor.

Recruitment of new applicants for student instructors can happen through the course itself: instructors can advertise the opportunity to teach the course in the final week of class. It can be beneficial to select an instructor who took CS-JEDI in the past, as they will already be familiar with

the mechanics of the course. The teaching position can also be advertised more broadly to PhD students in the department.

There are several benefits of co-teaching CS-JEDI that can be advertised to students:
- It offers more in-depth, hands-on experience with teaching, DEI, and curriculum development than other TA-ships
- It's a particularly fun and rewarding way to satisfy TA requirements, offering opportunities to be creative and form connections with other students.

Application process: To apply to co-teach CS-JEDI, students must fill out a short application, included in the *Student Instructor Application*. Once the application deadline has passed, the selection process will be carried out by the exiting student instructor, the current student instructor, and the faculty instructor via the procedure below. Instructors should be selected at least 3 months in advance of the course beginning, so they have time to prepare.
Selection procedure:
1. Considering applications in blind fashion, first have all committee members independently score all candidates using a predefined rubric (included in the application).
2. Then, the instructors see the identities of the applicants and meet to discuss their scores. If the instructors want to, they can request the opportunity to briefly interview a few candidates, using a pre-planned set of questions ideally screened by the aforementioned DEI expert.
3. Contact the chosen student instructor.

B. Documenting and updating the curriculum over time

Any substantial changes to the course content would ideally go through a lightweight approval process to ensure that the CS-JEDI curriculum doesn't drift away from the core course goals. The process described here may feature less formal approval than is ideal; the implementation of this plan is evolving, and additional potential formality is discussed in Future Work (part D).

Who proposes and makes changes. Current instructors are responsible for proposing and making course changes, with the help of the curriculum and DEI experts described above. To do so, at the end of the semester, instructors should follow the procedure in the *Turnover Procedure*, which details the entire procedure of documenting and updating the curriculum. Importantly, *instructors do not have to propose curriculum changes on their own;* they may consult the curriculum and DEI experts mentioned above.

C. Building CS-JEDI anew in a department

At CMU CSD, the implementation of CS-JEDI was a widespread effort involving many PhD students, faculty, staff, and expert consultants from the CMU community. Exactly one year passed

between the proposal of an initial pilot course and institutional approval for the course to be indefinitely required for first-year PhD students in our department. This section describes some possible strategies for implementing CS-JEDI in a new context, based on some lessons learned from implementing it at CMU.

Key features of a successful implementation process:

It is a community-level effort. The process should "bring people along" – i.e., cultivate widespread and diverse institutional awareness, investment, and support for the course. This means seeking and openly accepting feedback, input, and critique from all community members, particularly those with less institutional power. It also means those in charge of organizing the course holding themselves accountable for ensuring that this feedback is seriously considered and community concerns are addressed. The process should explicitly <u>not</u> be about a few people getting credit, or a performative effort that the institution uses for promotion.

It builds permanent institutional knowledge. The process should result in institutional knowledge about the course by a broad set of permanent fixtures in the community (faculty, staff, and institutional leadership).

It protects the time of students and marginalized community members. The process should ensure that student labor is not overused and duly compensated. Care should also be taken to avoid pressure being placed on students or marginalized community members to put in more work than they want, particularly as a result of existing power dynamics in academia.

It is aware of and explicitly acts against academic power hierarchies. All groups and committees working toward instating the course should explicitly enact accountability mechanisms to ensure these groups remain inclusive, and that external power hierarchies do not impact the extent to which all members can impact decisions (e.g., see the [Liberating Structures framework](#)). In parts of the process where advocacy is required, students and marginalized community members should not be asked to undertake career risks (e.g., making asks to faculty or leadership) or be placed in positions where they are unprotected from the reactions of faculty or others with more institutional power.

Some ideas for how to build a successful implementation process:

Establish a diverse core team of faculty, staff, students, and DEI/teaching experts. The steps required to instate CS-JEDI in a new context include curriculum design tasks like updating course documentation and selecting readings to assign. However, a larger portion of the work involves tasks like those described below, which do the much more important work of building community knowledge and investment. This work can be effectively done by a core team of community members who bring diverse perspectives, expertise, and connections to different parts of the community.

Get feedback from a broader "brain trust" of community members. One approach to soliciting feedback from a larger subset of the community without imposing significant work on them is to offer them the opportunity to be sent materials from time-to-time on which they can choose to give their feedback. Importantly, the materials sent to these students must come with low-effort, well-designed mechanisms for them to give feedback and clear instructions.

Offer short, optional course modules. The course consists of six modules, all of which can, to a large extent, be taught in isolation. To build community understanding and awareness of the course, one can offer one module at a time, open to all community members. Adding a feedback portion after such an offering can also be a way to seek more direct feedback on the curriculum.

Pilot the course and collect data. Although offering optional modules can be valuable, to really establish the potential efficacy of this course as a requirement, it is important to test the course in *required* form, i.e., run a test version that is mandatory for the target audience. Collecting data from such a pilot can be a valuable way to demonstrate potential efficacy and identify pitfalls not observed when all participants opt in.

Prioritize transparency. Ensure that all decision-makers, stakeholders, and community members have full access to materials for some time prior to decisions being made and are invited to weigh in. Be clear about the process by which feedback is being considered and incorporated.

Seriously consider all feedback, in all forms. In academic culture, there is often emphasis often placed upon "objectivity" and "rationality", which may lead to discounting feedback that is conveyed in a way that is outside these norms and/or conveyed with emotion. An important distinction between CS-JEDI and mathematical courses is that we must consider carefully the *emotional* impact of CS-JEDI's core content, which makes it even more crucial that *all* feedback – even that which is conveyed in a way that, to the listener, seems non-constructive, emotional, or non-"objective", contains an honest reaction that should be considered in the design and implementation of the course.

Build in structures for labor to be compensated. The process of implementing this course in a sustainable way will require significant work, and moreover, historical patterns suggest that this work may tend to be undertaken disproportionately by community members in marginalized groups. To be prepared for such cases, before the process begins, there should be (1) clear criteria for what labor will be compensated and how that labor will be compensated, and (2) established infrastructure for providing that compensation when the criteria is met.

D. Future work: central oversight committee

The institutional processes described here are by no means final and continue to evolve. One particular resource that would provide central support to all the processes described above, would

be a permanent course oversight committee. Here, we describe a vision for this committee, and how it would interplay with the previous three sections.

Committee composition and structure. The central oversight committee would be composed of faculty and staff (and students, optionally). It would contain at least some community members who have expertise or direct experience with DEI and/or curriculum development. Members would serve on the committee for multiple years at a time. The time commitment for committee members would be extremely limited, except for around the time the course is being taught.

Possible roles of the committee. This committee could serve in the following roles, which would support tasks in all three previous sections:
- Review and approve changes to the course materials
- Serve as consultants for the current course instructors, as they handle teaching they course and updating the materials
- Review course evaluations to ensure the course is remaining on track, and suggesting new courses of action if necessary
- Serve as an additional place where students and other community members can bring questions and concerns about the course
- Manage central repositories of course materials and other long-term documentation
- Manage the initial adaptation of course materials and institutional establishment of the course (as in Section C)