To: Chair Dembrow
    Vice Chair Thomsen,
    Members of the Senate Education Committee

Subject: Support for SB 1590.

Thank you for the opportunity to share testimony in support of SB1590.

In most of the world, people call computer science "informatics". This is a more accurate name than "computer science", because what we are really teaching is how to structure and process information, what questions we can and can't answer about it using the kinds of tools we can build, and the details about those tools you need to understand to use them effectively. Because these insights are broadly useful, they should be broadly available.

Everyone needs to use information to engage with the world, and more people than ever have access to powerful tools such as smartphones connected to the internet. We can accomplish a lot using computers in simple, well-known ways like browsing the web: digital literacy is valuable. However, we have a long way to go when it comes to computing changing how we live and work, and imagining and achieving those changes, in the wide range of fields where they are possible, requires detailed knowledge of how computing tools work, and experience using them to create.

These changes are generating jobs, funded research, and other opportunities. <u>SB1590 is about ensuring that as many Oregonians as possible get a fair chance to benefit from those opportunities.</u> Right now, opportunities in computing are disproportionately available to White and Asian men, and people who have more money and live in cities. Not only is this unjust, it also shuts out voices and ideas that we need to innovate, and narrows the set of problems that we apply computing to solve.

<u>To work towards fixing this inequity, we need to make computer science education available to anyone who wants to access it.</u> For that education to be useful, it needs to provide accessible paths to developing career skills. Many skills for computing professions require a chain of concepts that build on one-another. For example, you need to understand basic control flow and data structures to implement an algorithm, to understand algebra and recurrence relations to analyze how much memory and time the algorithm takes to run, and to know those costs in memory and time to predict the cost in dollars of using that algorithm in backend code to run a website. Without the earlier links in that chain, the later ideas don't make sense.

Building up these chains of ideas takes time, and is more natural and less stressful when it happens gradually. Many pursue this work in higher education, and AFT-OR represents, among others, educators in Oregon universities and community colleges. We know from common sense and research that previous computer science coursework and a student's comfort level and stress level are major factors in their success in introductory computer science courses at

universities and community colleges. Many students who come to computer science classes are ready to work hard and learn, but haven't yet built a strong foundation in basic programming concepts and tools. Often, they are in a position of having to build a foundation while being expected to develop knowledge and skills on top of that foundation. It is a stressful way to learn, and contributes to students dropping out of computer science degree programs at universities and community colleges, and works against computer science graduates being representative of the Oregon population. Many students also start behind, but get the support they need, put in a lot of time and effort, and succeed, but getting a degree should not be so hard for folks who just haven't had the same opportunities before entering the program.

SB1590 would go a long way towards leveling the playing field, as well as yielding benefits for students joining the workforce after high school. In Oregon, only 55% of public high schools offer a foundational course in computer science, and only 11% of high schools in the state offer advanced placement courses in computer science, which are vital in preparing students for higher ed and careers. Giving all Oregonians a chance to start early, and build a foundation at a reasonable pace, will set up a broader set of our incoming students for success. Thank you for reading, we urge you to support SB1590.

Sincerely,

Ted Cooper, PhD Candidate in Computer Science
on behalf of the AFT-Oregon Political and Legislative Action Committee

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