2017 SENATE EDUCATION

SB 2185

2017 SENATE STANDING COMMITTEE MINUTES

Education Committee
Sheyenne River Room, State Capitol

SB 2185
1/17/2017
Job Number 26957

☐ Subcommittee
☐ Conference Committee

Committee Clerk Signature	*Sandy Baumgartner*

Explanation or reason for introduction of bill/resolution:

Relating to high school graduation requirements

Minutes: #1 (p.1), #2 (p.1-4), #3 (p.1-2)

Chairman Schaible: Open the hearing on SB 2185
Senator Poolman: I am senator from Dist. 7 representing Bismarck and Lincoln. Testimony #1 (p.1).
Questions and answers followed. Meter reading from 0:45-7:49.
Chairman Schaible: Other testimony in favor of?
Ann Ellefson: Director of Office of Academic Support of NDDPI. #2 (p.1-4)
Questions and answers: Meter reading from 13:16-14:45.
Deana Wiese: Executive Director of Information Technology Council of North Dakota. Testimony #3 (p.1-2).
Lisa Johnson: Director of Student Inventory for the ND University system. No written testimony.
Conveys university support of SB 2185. Meter reading from 19:09-25:25.
Other testimony?
Close hearing.

2017 SENATE STANDING COMMITTEE MINUTES

Education Committee
Sheyenne River Room, State Capitol

SB 2185
1/18/2017
Job Number 27043

☐ Subcommittee
☐ Conference Committee

Committee Clerk Signature	*Sandra Baumgartner*

Explanation or reason for introduction of bill/resolution:

Relating to high school graduation requirements

Minutes:

Chairman Schaible: Committee open on SB 2185
Senator Rust moves a Do Pass on SB 2185
Senator Oban seconded.
Chairman Schaible: Any Discussion?
Senator Rust: There are protections to add one unit of computer science class approved by the Department of Public Instruction. Senator Rust expresses to move forward with bill.
Senator Kannianen expressed concern on the clarity for fulfilling the math requirements.
Chairman Schaible: Discussed how these classes will be higher level classes.
Roll called: 4 yeas, 1 nay, 1 absent
Senator Vedaa will carry

**2017 SENATE STANDING COMMITTEE
ROLL CALL VOTES
BILL/RESOLUTION NO. 2185**

Senate Education _____ Committee

☐ Subcommittee

Amendment LC# or Description: _____

Recommendation: ☐ Adopt Amendment
☒ Do Pass   ☐ Do Not Pass   ☐ Without Committee Recommendation
☐ As Amended   ☐ Rerefer to Appropriations
☐ Place on Consent Calendar
Other Actions: ☐ Reconsider   ☐ _____

Motion Made By ___Rust_____ Seconded By ___Oban_____

Senators	Yes	No	Senators	Yes	No
Chairman Schaible	✓		Senator Oban	✓	
Vice-Chairman Rust	✓				
Senator Davison	ab				
Senator Kannianen		✓			
Senator Vedaa	✓				

Total   (Yes) _____4_____ No _____1_____

Absent _____1_____

Floor Assignment _____Senator Vedaa_____

If the vote is on an amendment, briefly indicate intent:

REPORT OF STANDING COMMITTEE

SB 2185: Education Committee (Sen. Schaible, Chairman) recommends **DO PASS** (4 YEAS, 1 NAYS, 1 ABSENT AND NOT VOTING). SB 2185 was placed on the Eleventh order on the calendar.

2017 HOUSE EDUCATION

SB 2185

Education Committee
Coteau A Room, State Capitol

SB 2185
3/1/2017
Job 28566

☐ Subcommittee
☐ Conference Committee

Committee Clerk Signature	

Explanation or reason for introduction of bill/resolution:

Relating to high school graduation requirements.

Minutes:	Attachments 1, 2, 3.

Chairman- Mark S. Owens: I invite the clerk to call the roll.

Senator Poolman: attachment 1

Chairman- Mark S. Owens: committee any questions. You think with all the computer systems and the smartphones the kids will be able to figure them out.

Senator Poolman: yes.

Chairman- Mark S. Owens: seeing no questions, anyone else in support of SB 2185.

Ann Ellefson: attachment 2

Chairman- Mark S. Owens: any questions

Vice Chairman- Cynthia Schreiber-Beck: do you know how many courses might be currently available that could be, or make a guess of how many computer courses might be available for choice for the students.

Ann Ellefson: off the top of my head I do not know the number of courses, it will take a detailed course review with our partners at the university system and CTE to look and fully vet those courses to ensure that strong mathematical concepts are in place before putting them on the list as an improved cross reference course.

Vice Chairman- Cynthia Schreiber-Beck: distance ed would have some availability for the smaller schools correct, to have some of that computer course work available, do you think?

Ann Ellefson: yes I believe the center for distance education, the online school out of Fargo has computer education courses, and could be a strong asset to offer additional courses in our rural districts where it might not currently be an opportunity.

Chairman- Mark S. Owens: any further questions.

Rep. Matthew Ruby: there are 20 states that have already moved in this direction, and they either do math or science, is computer science really just a good mix of either one that we could maybe give the school the choice on which they can replace a math or a science, rather than just a math.

Ann Ellefson: yes you are right, there is 20 states. 14 of them require it to be allowed for a math or science credit, 3 allow it to be only for math, and 4 have a special computer science requirement built in as a required element. Here in North Dakota we believe that it is a stronger tie to math than to our sciences, but if that were something that the committee would like to discuss further, I am sure we can bring any university system, CTE, and DPI together to help with that conversation.

Chairman- Mark S. Owens: any further questions.

Rep. Rich S. Becker: I am assuming that the computer science program, its available online, but who developed the course offering, is it DPI or is it part of the university system, the instructor is where?

Ann Ellefson: the local schools and districts designed the curriculum in their courses, the online courses that are available through the center for distance education, they may have computer science courses, those courses may be developed by the center for distance education or they may be purchased through an online curriculum. Their purpose of this bill would be to define the parameters of what would have to be in those courses to make sure that they are rigorous, whether it is an online course or whether it's a course where you have a human and a teacher, and students all in the same group. The DPI would work in concert with its partners in developing that framework, and then districts decide locally how they would deliver that curriculum to their students and meet those levels or rigor.

Rep. Rich S. Becker: the partnerships you have mentioned, are those representatives from other states, are they from the university system, I am just trying to hole in a little further on who actually is teaching the material.

Ann Ellefson: the people teaching the material would be North Dakota teachers, if its over to the center of distance education for each of the courses, they have a North Dakota teacher associated with those courses. When I talk about the state system partners, DPI will work with the university systems to make sure that no students are short changed by going to a college with a computer science course, and it would be absent counting for the math credits, we will work to ensure that the system are talking to each other, we will work with the career and tech education as well, those are the partners I am referencing, those state level partners.

Chairman- Mark S. Owens: any further questions. Any additional support for SB 2185.

Deana Wiese: attachment 3.

Chairman- Mark S. Owens: any questions.

Vice Chairman- Cynthia Schreiber-Beck: can you elaborate a little bit on the pilot project that was in Grand Forks, or is it too new, when did you start it, and how is it going.

Deana Wiese: We are just in the first semester of it, and we will be looking to report on that, and then to also sit down with the educators in Grand Forks that are teaching the course to find out how we can further engage with the students, and with the main goal of how do we continually reach them, if we are working with 8th grade students, we want to ensure that then there is a pathway through high school and into college.

Chairman- Mark S. Owens: any other questions, seeing none, thank you. Anyone in support of SB 2185, anyone in opposition to SB 2185, any neutral testimony for SB 2185, closing hearing on SB 2185.

2017 HOUSE STANDING COMMITTEE MINUTES

Education Committee
Coteau A Room, State Capitol

SB 2185
3/1/2017
Job 28570

☐ Subcommittee
☐ Conference Committee

Committee Clerk Signature	

Explanation or reason for introduction of bill/resolution:

Relating to high school graduation requirements.

Minutes: | No attachments. |

Rep. Bill Oliver: I move to pass SB 2185 as it sits.

Chairman- Mark S. Owens: ok we have a motion for a do pass for SB 2185, and I have a second from Rep. Andrew Marschall. Discussion, seeing none I will invite the clerk to call roll on SB 2185. 14-0-0, and Rep. Andrew Marschall will carry this bill.

2017 HOUSE STANDING COMMITTEE
ROLL CALL VOTES
BILL/RESOLUTION NO. SB 2185

House **Education** Committee

☐ Subcommittee

Amendment LC# or Description: _____

Recommendation: ☐ Adopt Amendment
☑ Do Pass ☐ Do Not Pass ☐ Without Committee Recommendation
☐ As Amended ☐ Rerefer to Appropriations
☐ Place on Consent Calendar
Other Actions: ☐ Reconsider ☐ _____

Motion Made By Rep. Oliver Seconded By Rep Marschall

Representatives	Yes	No	Representatives	Yes	No
Chairman- Mark S. Owens	V		Rep. Andrew Marschall	v	
Vice Chairman- Cynthia Schreiber-Beck	v		Rep. Bill Oliver	v	
Rep. Rich S. Becker	v		Rep. Brandy Pyle	v	
Rep. Pat D. Heinert	v		Rep. Matthew Ruby	v	
Rep. Dennis Johnson	v		Rep. Denton Zubke	v	
Rep. Mary Johnson	v		Rep. Ron Guggisberg	v	
Rep. Donald W. Longmuir	v		Rep. Corey Mock	v	

Total (Yes) __14__ No __0__

Absent __0__

Floor Assignment Rep. Marschall

If the vote is on an amendment, briefly indicate intent:

REPORT OF STANDING COMMITTEE

SB 2185: Education Committee (Rep. Owens, Chairman) recommends **DO PASS** (14 YEAS, 0 NAYS, 0 ABSENT AND NOT VOTING). SB 2185 was placed on the Fourteenth order on the calendar.

2017 TESTIMONY

SB 2185

SB 2185 - Testimony to Senate Education Committee

Nicole Poolman, District 7

Good morning, Chairman Schaible and members of the education committee, my name is Nicole Poolman, state senator from District 7 representing Bismarck and Lincoln.

SB 2185 seeks to add a DPI-approved computer science class to the list of courses eligible for math graduation requirements. As I mentioned yesterday, we need to acknowledge that students need more options to meet graduation requirements while preparing for the choices they want to make after high school. My hope is that this course addition is just the beginning. With a standards-based structure, we know there are many ways a student can learn a new concept or skill. Some students will learn algebra and geometry in a traditional class, others can learn it in a carpentry or construction class.

SB 2185 simply adds computer science as an option for students. The benefits for students are clear - giving more flexibility while preparing them for the technology they will undoubtedly see in the future. The bill appears lengthy because it also adds this option to the scholarship requirements.

TESTIMONY ON SB 2185
Senate Education Committee
January 17, 2017
by Ann Ellefson, Director of Academic Support
(701) 328-2488
Department of Public Instruction

Mr. Chairman and members of the committee:

My name is Ann Ellefson, Director of the Office of Academic Support of the North Dakota Department of Public Instruction (NDDPI). I am here today to provide supportive testimony for SB 2185, which provides students with the option of completing an approved computer science course and utilizing it to fulfill one of the required mathematics credits needed for high school graduation.

Computer science skills are widely recognized as a valuable asset in the current and projected job market. Computer science is key to driving innovation throughout the U.S. economy. Nearly every business and industry utilizes computer systems; these systems require strong computer science skills. The Bureau of Labor Statistics projects a 37.5 percent growth from 2012 to 2022 in the computer systems design and related service industry. To assure our students are successful in this ever-changing world, it is critical we encourage them to pursue and provide opportunities for them to increase their skills in computer science fields. According to Code.org, North Dakota has 670 open computing jobs and graduates 116 students in the computer sciences. This is 2.8 times the state's average demand rate.

Other states are moving forward to expand high-quality K-12 computer science education. The Education Commission of the States, Education Trends report identifies 20 states that have already moved in this direction and require a computer science course to be allowed to fulfill a mathematics or science graduation credit.

This bill does not impose additional high school credit requirements for student graduation. It simply provides an option for students to pursue an upper level computer science course, containing a significant amount of mathematical concepts, to be used to fulfill a mathematics requirement for graduation. This approach does not reduce the number of electives available for the student. Current North Dakota Century Code §15.1-21-02.2 requires three mathematics credits for high school graduation. With the passage of SB 2185, three mathematics credits will continue to be required for high school graduation, with the option of allowing students to take one computer science course for a mathematics credit.

The NDDPI has meet with the North Dakota University System (NDUS) and North Dakota Career and Technical Education offices to begin conversations on articulating the expectations between computer science courses tied to mathematics credits. A framework currently exists that utilizes a collaborative and systematic review process of math courses. This same process will be done in concert with the NDUS System to ensure that a computer science class given math credit meets the robust and rigorous expectations of courses aligned to NDSU admissions (see attached).

To assure our students are choice ready, we must incentivize participation in and expand the availability of computer science courses. Allowing high school students to fulfill a mathematics requirement via a mathematics based computer science course encourages more students to pursue computer science coursework and better prepares them for their future endeavors.

If there is one thing we have learned in the first 17 years of this 21st-century it is that students can and should learn and use mathematical skills and concepts in many learning situations and in many classrooms. We have learned there is much less long-term value for a student to learn algorithms and formulas in isolation. We have learned it is much more valuable for a student to USE those algorithms and formulas in a practical way applying those skills so the

knowledge and skills are learned and retained in a far deeper way. Will this bill cause a bit more work for adults needing to process and analyze the computer science courses to ensure they meet the high expectations of our high schools and university system? Yes. But, is this bill better for our students and their future? Most definitely, yes! Our work is not about what is best for adults; therefore, the NDDPI is committed to engaging in that extra work to lay a better path forward for our students.

Mr. Chairman that concludes my testimony and I ask the committee for a strong Do Pass vote on SB 2185. I am available to answer any questions.

Thank you.

	Content Area + required units	State Code	Notes	4 Yr. H.S. Max credit	HS Core for NDUS Admissions
	ND Math (units) 3 required				
MATH	Prealgebra (.5 or 1)	11030	May be used for 1 of 3 Math units	1	
MATH	Algebra (1)	11031	May be used for 1 of 3 Math units	1	YES
MATH	Algebra 1 Semester 1 (.5)	11035	May be used for 1 of 3 Math units	0.5	YES
MATH	Algebra 1 Semester 2 (.5)	11036	May be used for 1 of 3 Math units	0.5	YES
MATH	Linear Algebra (.5 or 1)	11037	May be used for 1 of 3 Math units	1	YES
MATH	Linear Programming (.5)	11038	May be used for 1 of 3 Math units	0.5	YES
MATH	Abstract Algebra (.5 or 1)	11039	May be used for 1 of 3 Math units	1	YES
MATH	Discrete Mathematics (.5 or 1)	11033	May be used for 1 of 3 Math units	1	YES
MATH	Algebra II (.5 or 1)	11032	May be used for 1 of 3 Math units	1	YES
MATH	College Algebra (.5 or 1)	11034	May be used for 1 of 3 Math units	1	YES
MATH	Calculus (.5 or 1)	11061	May be used for 1 of 3 Math units	1	YES
MATH	Applied Geometry (.5 or 1)	11119	May be used for 1 of 3 Math units	1	YES
MATH	Geometry (.5 or 1)	11120	May be used for 1 of 3 Math units	1	YES
MATH	Analytic Geometry (.5 or 1)	11121	May be used for 1 of 3 Math units	1	YES
MATH	Solid Geometry (.5 or 1)	11124	May be used for 1 of 3 Math units	1	YES
MATH	General Mathematics I (.5 or 1)	11111	May be used for 1 of 3 Math units	1	
MATH	Consumer Mathematics (.5 or 1)	11145	May be used for 1 of 3 Math units	1	
MATH	Probability and Statistics (.5 or 1)	11150	May be used for 1 of 3 Math units	1	YES
MATH	Integrated Mathematics I (.5 or 1)	11051	May be used for 1 of 3 Math units	1	YES
MATH	Integrated Mathematics II (.5 or 1)	11052	May be used for 1 of 3 Math units	1	YES
MATH	Integrated Mathematics III (.5 or 1)	11053	May be used for 1 of 3 Math units	1	YES
MATH	Trigonometry (.25, .5, or 1)	11160	May be used for 1 of 3 Math units	1	YES
MATH	Trigonometry/Analytic Geometry (.5 or 1)	11161	May be used for 1 of 3 Math units	1	YES
MATH	Geometry/Trig/Advanced Algebra (.5 or 1)	11162	May be used for 1 of 3 Math units	1	YES
MATH	STEM Seminar (Math) (.5 or 1)	11170	Elective Math credit only	1	YES
	College Learning Lab-Math (.5 or 1)	11118	Elective Math credit only	1	
	Precalculus (.5 or 1)	11181	May be used for 1 of 3 Math units	1	YES
MATH	Applied Mathematics (.5 or 1)	11190	May be used for 1 of 3 Math units	1	
MATH	Occupationally Applied Math (.5 or 1)	11191	May be used for 1 of 3 Math units	1	YES
MATH	Informal Geometry (.5 or 1)	11122	May be used for 1 of 3 Math units	1	YES
MATH	Particular Topics in Foundation Math (.5 or 1)	11112	May be used for 1 of 3 Math units	1	
MATH	AP Statistics (.5 or 1)	11580	May be used for 1 of 3 Math units	1	YES
MATH	AP Calculus AB (.5 or 1)	11581	May be used for 1 of 3 Math units	1	YES
MATH	AP Calculus BC (.5 or 1)	11582	May be used for 1 of 3 Math units	1	YES
MATH	Mathematics Intervention (.5 or 1)	11029	May be used for 1 of 3 Math units	3	

Revised 8/3/2016

Testimony of Deana Wiese
Executive Director
In Support of SB 2185
January 17, 2017

Chairman Schaible and members of the Senate Education Committee:

My name is Deana Wiese, and I am the executive director of the Information Technology Council of North Dakota (ITCND). I am here today to voice support of SB 2185, which would allow computer science courses to count toward math credits.

ITCND was created in 2000 by North Dakota business, government and education leaders who recognized the need to strengthen the state's information technology infrastructure and reposition the state as a national leader in IT. ITCND has nearly 80 member organizations, with representatives from both the public and private sector.

North Dakota's technology industry is expanding rapidly. Recent Job Service North Dakota data shows that North Dakota has seen an increase of more than 30 percent in technology occupations over the past decade and is projecting a 20 percent increase for the next decade. Job growth in North Dakota's technology industry has more than doubled that of the nation. In addition, technology-related jobs are seen across all industries, including agriculture, energy, health care, finance and manufacturing. A shortage of skilled workforce is a limiting factor for technology-based industry growth. Therefore, the development of a technology-savvy workforce is vital to the future growth of North Dakota's economy. This bill is a very important first step in preparing the workforce of the future.

Recognizing the significant workforce needs of its members, ITCND launched its IT Career Awareness Program in 2009 with the purpose of developing a future technology workforce for North Dakota by providing students with the information and education needed to be technology producers, not just consumers, in the digital economy. ITCND partnered with the North Dakota Department of Career and Technical Education (CTE) for the delivery of the

program, and we have worked together to reach tens of thousands of students in dozens of communities statewide with technology education and career information.

One of the objectives of the program is to work with the North Dakota education system to increase the number of IT-related courses and degrees available at middle school, secondary and postsecondary levels, and this bill assists in this effort by eliminating one of the road blocks for students interested in pursuing technology-related course work prior to postsecondary education. Most recently, we partnered with Grand Forks Public Schools on a pilot project to implement computer science courses in each of its eight grade classrooms understanding the earlier we engage students in technology-related education, the better chance they will continue into high school. This bill would allow those interested in computer science at the high school level to apply the course toward one of his or her math credits, which counts toward their graduation credits, instead of fitting it into one of the limited elective slots. We also like that this bill provides the option to have a computer science course qualify as a math credit, but does not require it. This provides the flexibility for students to pursue courses that best meet their individual interests and skill sets, which ITCND strongly supports.

We applaud the sponsors of this bill for their forward thinking on this initiative and would ask for your support of SB 2185.

I'd be happy to answer any questions.

SB 2185 - Testimony to House Education Committee

Nicole Poolman, District 7

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SB 2185 simply adds computer science as an option for students. The benefits for students are clear - giving more flexibility while preparing them for the technology they will undoubtedly see in the future. The bill appears lengthy because it also adds this option to the scholarship requirements, but the only real change being made here is allowing students to earn that math credit through a DPI-approved computer science course.

TESTIMONY ON SB 2185
House Education Committee
March 1, 2017
by Ann Ellefson, Director of Academic Support
(701) 328-2488
Department of Public Instruction

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Department of Public Instruction (NDDPI). I am here today to provide supportive testimony for SB

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and utilizing it to fulfill one of the required mathematics credits needed for high school graduation.

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computer science skills. The Bureau of Labor Statistics projects a 37.5 percent growth from 2012 to

2022 in the computer systems design and related service industry. To assure our students are

successful in this ever-changing world, it is critical we encourage them to pursue and provide

opportunities for them to increase their skills in computer science fields. According to Code.org,

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mathematics or science graduation credit.

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Revised 8/3/2016

ITCND

INFORMATION TECHNOLOGY COUNCIL
—— OF NORTH DAKOTA ——

Testimony of Deana Wiese
Executive Director
In Support of SB 2185
March 1, 2017

Chairman Owens and members of the House Education Committee:

My name is Deana Wiese, and I am the executive director of the Information Technology
Council of North Dakota (ITCND). I am here today to voice support of SB 2185, which would
allow computer science courses to count toward math credits.

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recognized the need to strengthen the state's information technology infrastructure and
reposition the state as a national leader in IT. ITCND has nearly 80 member organizations, with
representatives from both the public and private sector.

North Dakota's technology industry is expanding rapidly. Recent Job Service North Dakota data
shows that North Dakota has seen an increase of more than 30 percent in technology
occupations over the past decade and is projecting a 20 percent increase for the next decade.
Job growth in North Dakota's technology industry has more than doubled that of the nation. In
addition, technology-related jobs are seen across all industries, including agriculture, energy,
health care, finance and manufacturing. A shortage of skilled workforce is a limiting factor for
technology-based industry growth. Therefore, the development of a technology-savvy
workforce is vital to the future growth of North Dakota's economy. This bill is a very important
first step in preparing the workforce of the future.

Recognizing the significant workforce needs of its members, ITCND launched its IT Career
Awareness Program in 2009 with the purpose of developing a future technology workforce for
North Dakota by providing students with the information and education needed to be
technology producers, not just consumers, in the digital economy. ITCND partnered with the
North Dakota Department of Career and Technical Education (CTE) for the delivery of the

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program, and we have worked together to reach tens of thousands of students in dozens of communities statewide with technology education and career information.

One of the objectives of the program is to work with the North Dakota education system to increase the number of IT-related courses and degrees available at middle school, secondary and postsecondary levels, and this bill assists in this effort by eliminating one of the road blocks for students interested in pursuing technology-related course work prior to postsecondary education. Most recently, we partnered with Grand Forks Public Schools on a pilot project to implement computer science courses in each of its eight grade classrooms understanding the earlier we engage students in technology-related education, the better chance they will continue into high school. This bill would allow those interested in computer science at the high school level to apply the course toward one of his or her math credits, which counts toward their graduation credits, instead of fitting it into one of the limited elective slots. We also like that this bill provides the option to have a computer science course qualify as a math credit, but does not require it. This provides the flexibility for students to pursue courses that best meet their individual interests and skill sets, which ITCND strongly supports.

We applaud the sponsors of this bill for their forward thinking on this initiative and would ask for your support of SB 2185.

I'd be happy to answer any questions.