1) Glossary of Terms

a) *Below Transfer Level (BTL) Courses* – Courses offered by the community college which are considered college credit (may count towards an associate degree or certificate), but are not considered transferable to the California State University (CSU) or the University of California (UC). Also known as college-level and can include remedial courses.

b) *Remedial Courses* – Courses offered by the community college which are considered college preparatory courses and are to provide the basic skills to help a student take transfer-level courses. Also known as developmental education or basic skill education. Remedial courses unlike college-level or BTL courses did not count towards a student's associate degree.

c) *Transfer-level (TL) Course* – Courses offered by the community colleges which are transferable to the CSU and the UC. For clarification, it is possible for a transfer course to be offered to a student without it counting towards the student's degree due to degree-credit limits.

d) *STEM* – Science, Technology, Engineering or Math students. Students who enroll in STEM pathways or degrees are on a traditional math sequence and the first course that is the first "Transferable course" for purposes of their pathway is Calculus I.

e) *Highly Unlikely to Succeed* – This term is not defined in either AB 705/1705 or in the California Code of Regulations Title 5 Section 55003 (as suggested by AB 705). The Chancellor's Office of the CCC has determined unlikely to succeed in Calculus I for validation purposes is a success rate of 15%.

f) *Multiple Measures* – the method by which CCC would determine the math or English course to place students to determine the probability of successful completion. The tools used to determine the placement are as follows:

i) *High School Courses;*

ii) *High School Grades (specific grades in specific courses, such as a C or better); and,*

iii) *High School Grade Point Average.*

g) *Placement Data* **–** Placement data is a college's local data that is used to demonstrate a student is unlikely to succeed based on the student's high school coursework, high school grades or GPA data. Also known as *validation data.*

h) *Corequisite supports* – additional supportive measures offered in addition to the regular class time to help students "re-learn" or learn for the first time the skills necessary to be successful in TL coursework.

i) *Attrition* – the dropout rate between courses in a sequence leading to either the TL course or the TL course designated as credit bearing for the degree pathway.

j) *Transfer-Level preparatory courses* – In STEM sequences there are TL courses that are not the first course that will be credit bearing for the degree pathway. Trigonometry and pre-calculus are considered TL but do not count as the first math course for purposes of a STEM degree (that would be calculus).

k) *Placement vs Enrollment* – "Placement" is the suggested course a student should begin in when entering college and "Enrollment" is the course a college shall enroll the student in when beginning their math and English work at a college.

l) *Throughput* – The percentage of students who begin in a course sequence and successfully complete a TL course in a given timeframe. For TL English this would be a remediation to transfer level course with a one year timeframe and for TL STEM Math this would be two TL preparatory courses leading to calculus within a two year timeframe.

2) Remediation – In the beginning there was remediation.

In November 2016, the Public Policy Institute of California (PPIC) published a report identifying remedial education has one of the largest impediments to degree attainment in the California community colleges (CCC). At the time, the report found 80% of all students enrolled at the community college took at least one remedial course in either reading, writing or math. Of those required to take remedial math, only 27% of students eventually completed a college – level or transfer – level (TL) course (the report did not distinguish between college and TL course). Only 16% of those who took a remedial course eventually obtained a degree and only 24% of those who took remediation transferred to the CSU or UC after six years. The typical community college student was placed ***four*** courses below college level math and would take on average ***11 terms or five and half years*** to transfer to a four-year university. Remediation resulted in high attrition rates among students and those placed in remediation were often placed there due to inaccurate placement test.

The PPIC report provided examples of changes the CCC were undertaking to address the high attrition rate and the concern that many remediation courses did not provide the basic skills necessary for students to be sucessful in college-level and transfer-level courses. However, the efforts were seen as stop gaps in the reform necessary to ensure students were placed and enrolled in coursework associated for their intended educaitonal goals.

3) AB 705 (Irwin), Chapter 745, Statutes of 2017

The goal of AB 705 (Irwin) was to prevent the automatic placement of students into remedial courses that would delay or deter their educational progress ***UNLESS*** the CCC could demonstrate that the student was highly unlikely to succeed if placed into a college or TL course.

AB 705 (Irwin) did the following:

- Required CCC to maximize the probability that a student would enter and complete a transfer-level course in math and English within one year and required colleges to use multiple measures for the placement of students into math and English courses;
- Placed standards for how colleges could use the multiple measures to determine placement of students in math and English courses to maximize the students successful completion of TL math and English; and,
- Prohibited the enrollment of students into remedial education courses ***unless,*** the college could demonstrate through placement research that the student is highly unlikely to succeed in a TL course.

4) Progress after AB 705 (Irwin).

AB 705 (Irwin) ushered in a fundamental change in how community colleges placed and enrolled students into courses. The community college system, whose mission includes accepting the top 100% of students, no longer required students to prove they were ready for TL course; instead, the student were given the right to enroll in TL courses. AB 705 (Irwin) shifted the responsibility of "proving" competency from the student to the college. The Colleges must demonstrate with **placement data,** which the student is unlikely to succeed without additional course work. In November 2020, the PPIC published a report, "A New Era of Student Access at California's Community Colleges," on the progress of AB 705 (Irwin) in expanding access and success in TL course work. The report highlighted the following data points:

- Fall 2019 – 96% of students took a TL English course as their first English course at the CCC;

- Some colleges elected to remove ***REMEDIAL COURSES*** because data showed many students in those courses were not making it to college composition.
- Fall 2019 - 61% of students who enrolled in TL English completed the course in one term compared to the 27% who completed transfer-level English in fall 2015.
- Fall 2019 – 78% of students took a TL math course as their first math course at the CCC;
- Some colleges elect to keep remedial math courses because of the open-access policy at the CCC and the desire to ensure all students have the scaffolding of basic skills to be successful in higher math coursework. ***Committee staff also note at this time Intermediate Algebra (or Algebra II) was the math course required for most associate degrees at the CCC.***
- Fall 2019 – 40% of students who enrolled in a TL math course successfully completed the course in one-term. In fall 2014, 14% of students successfully completed a TL math course.
- Corequisite are proven to be more effective in assisting students to complete TL English and math in one term than remedial education courses.

5) Concerns with implementation of AB 705 (Irwin)

- Implementation of the multiple measures placement requirements was uneven across the system; some colleges still relied on placement exams or self-guided placement that included sample coursework;
- 1 in 5 colleges still required or allowed students to enroll in BTL courses and only 1 in 5 of those students completed a TL course[1];

[1] https://www.ppic.org/publication/community-college-math-in-californias-new-era-of-student-access/

- Half of the students who started in a TL course did not successfully complete the course on their first attempt[1];
- 43% of students in STEM majors did not start in an **TL or TL preparatory courses** (Calculus, Pre-Calculus or Trigonometry);
- Colleges raised concern the language of AB 705 required students to enroll in math and English within their first year and complete the course within the first year – the law did not provide flexibility in course scheduling; and,
- Corequisite supports varied across the system.

In fall 2021, the Chancellor's Office determined with systemwide data that students were less likely to complete TL English and math courses within a one-year timeframe when local placement rules require, encourage, or allow students to enroll in BTL courses.

6) AB 1705 (Irwin), Chapter 926, Statutes of 2022

In 2022, with the support of the Chancellor's Office, Assemblymember Irwin sought to close the loopholes in AB 705 (Irwin) and provide additional statewide standards for placement and enrollment at the CCC. The intent of AB 1705 (Irwin) was to ensure that initial math and English placement and enrollment was solely based on the multiple measures provided by the student. AB 1705 (Irwin) conceded that for a small group of students BTL courses may be necessary in order to achieve the broader community college mission to help student achieve their academic goals. Therefore AB 1705 (Irwin) introduced new standards for the placement and enrollment of students into math and English course work to maximize the probability that the student would complete a TL course within one year of their initial attempt in the discipline. Specifically AB 1705 (Irwin):

- Required colleges to maximize the probability that a student would enter and complete the TL course in math and English, for their intended major, within one year of beginning the discipline;
- Clarified if a college places and enrolls a student in a BTL course, the college must prove the following:
    - The student was highly unlikely to succeed in the TL course for the degree or certificate; **AND;**
    - The enrollment in the BTL course will improve the student's ability to pass a TL math and English course within a one year timeframe.
- By July 1, 2023, all high school graduates and those with high school equivalence certificates would be directly placed and enrolled into the TL math and English for the student's intended major and the student will not be required to repeat high school coursework;
- Exemptions to the TL placement were included (See subdivision (j) of Education Code Section 78213);

Additionally, AB 1705 (Irwin) asked colleges to exam the STEM pathways leading to Calculus courses. Specifically, AB 1705:

- Asked colleges by July 1, 2024, to examine the impact of placing and enrolling students into no more than two TL courses that prepare students for Calculus. The verification of the "need" for the TL course that prepares a student for Calculus was whether the Pre-Calculus TL course improved the student's probability of completing Calculus; the student was highly unlikely to succeed if without the Pre-Calculus TL courses; and

whether the courses helped improve the student's ability to take and complete a second Calculus course.

7) Progress since AB 1705 (Irwin)

In 2023, a report published by the PPIC – "Tracking Progress in Community College Access and Success" – highlighted the progress of AB 1705 (Irwin) and AB 705 (Irwin). The report found that TL English enrollment reached **99% with only 800 students** enrolling in BTL courses. Students who successfully completed TL English in their first attempt rose to 59%. Direct access to TL math increased to 96% and successful completion of the courses on the first attempt rose to 51%.

As of the publication of this paper, the California Community College's Transfer-Level English and Math Completion Dashboard has the following data:

- Direct placement into TL English has a one term completion rate of 65%;
- Direct placement in BTL English has a one year throughput rate of TL English of 29%;
- Direct placement in TL Statistics has a one year completion rate of 64%;
- Direct placement into TL Calculus has a one year completion rate of 73%;
- Direct placement into TL Pre-Calculus has a two year throughput rate for TL Calculus of 31%.[2]

8) STEM Memo – February 2024

To assist colleges in determining which TL pre-calculus courses were deemed valid pursuant to the guidance of AB 1705 (Irwin), the Chancellor's Office contracted with the RP Group to examine statewide data and to provide college-level reports. In "Updated Preparatory Pathways

[2] Committee staff used the most up to date fully observed data on the dashboard.

and STEM Calculus Completion: Implications of the AB 1705 Standards", the RP Group made the following assertions after examining enrollment data from academic year 2012-2013 to academic year 2019-2020:

- Across all levels of high school math preparation, direct enrollment in calculus has a successful throughput rate within two years above 60%. Compared to direct enrollment in a preparatory TL math course, which across all levels of high school math did not have a calculus throughput rate above 46%;
- Based on the analyses ***no group defined by high school math preparation*** would be considered as highly unlikely to succeed in direct placement calculus;
- Across all levels of high school math preparation, enrollment in TL preparatory math courses was associated with lower calculus throughput relative to direct enrollment in calculus.
- Across all levels of high school math preparation and placement, longer paths were associated with higher attrition rates and lower calculus throughout in a two year period when compared with direct placement.

Based on information provided by the RP Group, the Chancellor's Office issued a memo to community colleges providing guidance for how to implement the STEM related portion of AB 1705 (Irwin). The memo used the RP Group data to assert that all colleges must give access to STEM to all students beginning on July 1, 2025 and that colleges who wished to continue offering TL preparatory math course would have to do the following:

- Produce local placement data that shows a success rate in calculus lower than 15% and a success rate of 50% or greater in calculus within two years for students who begin in a TL preparatory pathway; OR,
- Colleges could create a new innovative TL preparatory course that meets the requirements of AB 1705 and could offer this course until July 1, 2027, at which point the course would be required to meet the validation requirements described in the previous bullet point.

9) STEM Memo – December 2024

With no colleges meeting the immediate validation requirements for students who are unlikely to succeed in direct calculus placement, colleges began to raise concerns regarding what was considered a monolithic change in policy. Prior to the February 2024 memo, a student would have been deemed unlikely to succeed, if the student had not taken the prerequisite courses for TL calculus. The student would have been placed and enrolled in the course that was missing from the math sequence. AB 1705 changed this and instead required the colleges to demonstrate with their local placement data that a student was unlikely to succeed without the preparatory coursework. Meaning most students would be directly placed into calculus course immediately, even if they were missing the preparatory courses. This was because statewide data showed they were more likely to succeed if placed directly in calculus with supports vs. if they were placed in preparatory courses then calculus. In December 2024, the Chancellor's Office issued a second guidance memo for how colleges were to implement the math section of AB 1705 (Irwin). The Chancellor's Office continues to strongly encourage direct calculus placement with corequisite supports; however, the placement rules were changed to allow colleges to place students into

existing TL preparatory courses. Below is a diagram of the placement guidance which will be in effect until July 1, 2027, (which is beyond the scope of existing law):

STEM Calculus Pathway Placement	Placement and Enrollment in the STEM Calculus Pathway for STEM Students in Majors that Require STEM Calculus 1
Student successfully completed or demonstrated through CPL: **Integrated Math 4, Trigonometry, Precalculus, or equivalent**	By July 1, 2025, students pursuing STEM programs ***must be given access to STEM calculus*** (with or without concurrent support). Students cannot be denied access to STEM Calculus 1 after July 1, 2025.
Student successfully completed or demonstrated through CPL: **Integrated Math 3 or Intermediate Algebra or equivalent**	The college may enroll the student in a one semester course prior to Calculus (typically Pre-Calculus) or in Calculus, with or without concurrent support. If such students begin in a prior to Calculus course and successfully complete it, their next course is STEM Calculus 1. Enrollment in the course prior to Calculus should be restricted to students who have not successfully completed Integrated Math 4, Trigonometry, Precalculus, or equivalent.
Student did not successfully complete or demonstrate through CPL: **Intermediate Algebra, Integrated Math 3 or equivalent**	The college may enroll the student in a two-semester sequence at transfer-level prior to Calculus, with or without concurrent support. Enrollment in the first course in the two-semesters prior to Calculus should be restricted to students who have not successfully completed Intermediate Algebra, Integrated Math 3 or equivalent.