

GAP ANALYSIS REPORT
**Between the College Readiness Standards for Science and the
Texas Essential Knowledge and Skills for Science**

Report Developed by the Science Vertical Team, Phase 2:
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Background/Process:

Phase 2 of the College Readiness Program has been completed as directed by the Third Special Called Session of the 79th Texas Legislature with House Bill 1, Section 28.008 of Texas Education Code: “Advancement of College Readiness in Curriculum.”

A vertical team (VT) of ten members, six representing secondary public education and four representing higher education, was charged with evaluating the degree of alignment between the state’s College Readiness Standards (CRS, adopted by the Texas Higher Education Coordinating Board on January 24, 2008) for science and the proposed draft of the revised Texas Essential Knowledge and Skills (TEKS) for science (i.e., grades 6-8, biology, integrated physics and chemistry, chemistry, physics, astronomy, and earth and space science, etc.) and to identify any gaps that may exist. This process is called “gap analysis” and the two documents that the VT was charged with comparing are available on the Internet at: <http://www.theceb.state.tx.us/collegereadiness/TCRS.cfm> and <http://www.tea.state.tx.us/teks/scienceTEKS.html>.

Pre-meeting homework was emailed to all team members on September 26, 2008, which instructed members to review the CRS and proposed science TEKS and rate each of the CRS items as having strong, adequate, or weak alignment with the TEKS. The ranking system of “strong, adequate, weak” was referred to with the acronym “SAW.” In general, the SAW system was used to assess the qualitative degree of strength of the most direct connection between CRS and TEKS rather than a quantitative count of how many connections of any strength were found. For cases of alignment that were difficult to identify, members were also asked to note if this was due to the nature of the CRS or to the nature of the TEKS. Wherever gaps were found between the two documents, the ten-member Phase 2 team was instructed that the CRS could not be changed but that the TEKS could be revised to incorporate the CRS.

On October 6 and 7, 2008, the Phase 2 Science VT held an in-person meeting in Austin, Texas, to begin discussion of the homework individual team members completed prior to the meeting. Joseph Kulhanek, TEA Director of the College Readiness Program, guided the VT with the task of analyzing and aligning the CRS science key contents, organizing components, and performance expectations to the secondary science TEKS. An overview of Phase 1 was provided with ample time for additional questions from team members. Kenn Heydrick, Director of Science for the Texas Education Agency, provided an overview of the most recent proposed science TEKS adoption process and explained the legislative intent to incorporate the CRS into the TEKS.

Kenn Heydrick facilitated the VT discussion using the SAW scale and addressed the first CRS performance standard. The template was pre-populated in the left-hand column with the CRS. The middle column was used to record the VT's SAW alignment rating and comments. The right-hand column was used to record the specific parts of the proposed science TEKS that the VT members found to align with the CRS. After the collective VT completed the first CRS performance standard, the VT was broken into two teams to simplify the process. Each team consisted of two higher education representatives and three secondary education representatives. One team, facilitated by Kenn Heydrick, examined the 7th grade, biology, physics, Earth and space science, and astronomy courses. The other team, led by Irene Pickhardt, Assistant Director of Science for the Texas Education Agency, examined 6th and 8th grade, integrated chemistry and physics, chemistry, environmental systems and aquatic science.

Each team addressed all of the CRS performance standards for science by listing the proposed science TEKS that most directly correlated to that standard. After all the TEKS were listed, the team then voted using the SAW process as a measure of the alignment. Any additional comments were recorded on the spreadsheet and by the two co-chairs. Finally, as a result of certain courses being examined by the other team, it was recognized that at times there might be no alignment for a particular CRS performance standard. The two vertical team subgroups completed their initial work midmorning on October 7, 2008, and the two teams came back together. The spreadsheet for one team was projected so all members could see it. The spreadsheet for the other team was printed and copies were given to the entire team. Using the two documents, the collective team was able to see all the TEKS correlations for each CRS performance standard. The collective VT then went through the CRS performance standards one at a time discussing the comments from each subgroup and voting via the SAW method on the level of alignment. The results of this vote and any additional comments were recorded on the projected spreadsheet. The final review was facilitated alternatively by Kenn Heydrick and Irene Pickhardt.

A first draft of this gap analysis report was prepared by the co-chairs on October 10, 2008 and then emailed to the other eight VT members on October 16, 2008. All VT members had the opportunity to relay to the co-chairs any feedback or corrections via email on or before October 23, 2008. Taking into account the discussion and feedback from this stage, the co-chairs finalized the report and submitted it on October 24, 2008, to the agency for review and approval.

Findings and Contextual Comments for Gap Analysis Spreadsheet:

The Phase 2 College Readiness science vertical team members found that the CRS in science are adequately aligned with the TEKS for secondary science. With some major exceptions, team members generally indicated adequate alignment between the CRS and TEKS.

The following are the findings and comments for each individual CRS Standard:

I. *Nature of Science: Scientific Ways of Learning and Thinking* was found to be adequately aligned with the proposed secondary science TEKS.

- It was observed that professional ethics, CRS I.A.1, is not addressed in the proposed TEKS and skepticism is seldom addressed.
- Concern was expressed that the strongest correlation with CRS I.A.2 was found in Earth and space science, environmental systems, aquatic science and astronomy; all of which are elective courses.
- While most of the performance standards in this strand were rated as having strong alignment, the CRS I.C.1 was rated as weak. There is no mention of collaborative projects in the proposed TEKS.
- It was noted that CRS I.C.2 has more specificity than the corresponding proposed TEKS.
- CRS I.C.3 was considered stronger in the 6-8th grades than in the high school courses.
- The CRS I.D.1 mentions computer literacy, and the VT team had some difficulty with the definition of this skill. While there was some reference to the use of computers in the TEKS, the VT discussion focused on whether the use of computers to collect data is what is meant by computer literacy. It was suggested that if the intent was to teach basic computer skills (e.g., word processing, spreadsheet, database and computer facilitated communications), then this CRS was addressed in the current technology application TEKS and may not need to be in the science TEKS.
- CRS I.E.1 was judged to be adequately aligned. However, it was noted that it includes kinesthetic modes of expression and that is missing from the TEKS.
- It was noted that academic vocabulary was used through the TEKS and that no specific vocabulary lists were provided in the TEKS.

II. *Foundation Skills: Scientific Applications of Mathematics* was found to be weakly aligned with the proposed secondary science TEKS.

- The VT noted that these CRS performance standards are specifically math skills. While recognizing the importance of mathematics as a tool in science to understand the natural world, the VT felt that it must be clear that the primary responsibility for teaching the skills is in the mathematics curriculum. At the same time the VT recognizes that it is important to provide multiple opportunities for students to practice and apply these skills in the science classroom.

- There are some specific CRS performance standards that the VT felt should be strengthened in the TEKS and taught in the science class. They include:
 - CRS II.A.1, 3, 6
 - CRS II.C.2, 3, 4
 - CRS II.D.1 – Acknowledged to be especially important and needs to be strengthened.
 - CRS II.F.1, 3

III. *Foundation Skills: Scientific Applications of Communication* was found to be weakly aligned with the proposed secondary science TEKS.

- While the VT felt the basic skills taught in this strand should be addressed in the English language arts curriculum, there was strong agreement that many of these skills were not only important to science instruction but were appropriate to be addressed in the science classroom and should be strengthened in the TEKS.
- While CRS III.A.1 was correlated to a few TEKS, it was felt that it was not emphasized strongly enough.
- CRS III.B addresses scientific reading. The VT felt that this standard needs to be strengthened in the science TEKS. As a result, there was much discussion as to the appropriate manner in which to accomplish this task. Finally, this section addresses general teaching pedagogy rather than science content or scientific processes.
- The VT suggested that CRS III.C.1 and 2 should be strengthened in the TEKS. The CRS III.C.1 and 2 standards are much more detailed than the TEKS.

IV. *Science, Technology, and Society* was found to be adequately aligned with the proposed secondary science TEKS.

- While the VT felt this strand was over all adequately aligned, the CRS IV.B was especially weak.
- CRS IV.A.1 needs additional specific examples for teachers.
- CRS IV.B.1 and 2 are very poorly addressed in the TEKS. The VT felt these are very important concepts that need to be addressed in the TEKS.
- CRS IV.B.2 has some correlation in the TEKS. However, the contributions of historically underrepresented groups could benefit from additional coverage.

V. *Cross-Disciplinary Themes* were found to be adequately aligned with the proposed Secondary Science TEKS.

- While the VT felt this strand was adequately aligned there were some glaring exceptions. They include:
 - CRS V.A.2 may be covered in elementary grades but should be addressed in the middle school grades.
 - CRS V.E.1 is not addressed in the TEKS in terms of making predictions.
 - CRS V.E.2 was not clear to the VT, and no recommendation was made.

- In terms of macro scale, the CRS V.E.3 was partially addressed within the astronomy TEKS. However, it should be noted that nowhere within the TEKS is micro scale addressed.

VI. *Biology* was found to be adequately aligned with the proposed secondary science TEKS.

- While CRS VI.A.2 is adequately addressed in biology, it was suggested that it also be addressed in middle school.
- CRS VI.A.5 uses the term cytokinesis. While the TEKS do not use that specific term, they do address the cellular cycle.
- CRS VI.B addresses biochemistry. Though this standard is addressed in biology, the VT felt there should be additional emphasis in chemistry. Some of the performance standards (5 & 6) need to be strengthened in biology as well.
- CRS VI.D.2 is an aspect of Mendel’s laws that is not addressed in the TEKS.
- CRS VI.D.4 concerns aspects of population genetics that are not addressed in the TEKS.
- CRS VI.G.4 should be strengthened in environmental systems.

VII. *Chemistry* was found to be adequately aligned with the proposed secondary science TEKS.

- CRS VII.D.1 was considered weak because it is not mentioned in the TEKS. It was suggested that it be mentioned in both chemistry and in earth and space science.
- CRS VII.E.1 was rated adequate, but the TEKS do not mention the types of chemical reactions.
- It was felt that CRS VII.E 3, 4, and 6 needs to be strengthened in chemistry.
- CRS VII.E.5 should be addressed in middle school TEKS. It is introduced in middle school but not as specifically as IPC.
- CRS VII. I addresses “Properties and Behavior of Gases, Liquids, and Solids.” The TEKS are weak in the area of gases, and the entire concept needs to be examined.
- CRS VII.K.1 is not addressed in the TEKS.

VIII. The TEKS that address *physics* topics were found to be adequately to strongly aligned. However, there are concepts that are totally missing in the TEKS. These are listed below and include but not limited to rotational motion, simple harmonic motion and fluids.

- CRS VIII.A.1 is not adequately addressed in the TEKS. There is some investigation of the scale of very large structures, but there is nothing in the TEKS about the microscopic scales.
- CRS VIII.E addresses rotational motion. This concept cannot be found within the TEKS.
- CRS VIII.F addresses fluids. This concept cannot be found within the TEKS.
- CRS VIII.G.1 mentions simple harmonic motion, and the TEKS do not.
- CRS VIII.I.2 through 8 addresses specific aspects of electric circuits in detail while the TEKS combine them all into one general statement.

IX. *Earth and space science* was found to be adequately aligned with the proposed secondary science TEKS.

- Though most of the performance standards in this strand are adequately addressed, it should be noted that it primarily occurs within astronomy and Earth and space science. These are elective courses that many students may not take.
- CRS IX.E.2 says that students should identify the major tectonic plates. This is not addressed in the TEKS.
- CRS VIII.I.4, the rock cycle, is not mentioned in the TEKS. It is mentioned in the middle school TEKS but not in high school Earth science.

X. *Environmental science* was found to be adequately aligned with the proposed secondary science TEKS.

- Though many of the performance standards in this strand are adequately addressed, it should be noted that it primarily occurs within astronomy and Earth and space science. These are elective courses that many students may not take.
- CRS X.D.1 mentions major environmental policies and legislation which are not covered in the TEKS.
- CRS X.E addresses “Human Practices and Their Impacts.” This concept is only tangentially addressed within Earth and space science. On the whole, this subject is missing from the TEKS.

Phase 2 Vertical Team Members

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Science Vertical Team Gap Analysis

Organizing Structure for the Texas College Readiness Standards Compared to the Texas Essential Knowledge and Skills for Science

Texas College Readiness Standards in Science	Alignment Rating	Texas Essential Knowledge and Skills (TEKS) for Science	Comments from Vertical Team Members	Total Score	Overall Alignment Rating
The College Readiness Standards (CRS) are designed to help students understand the specific content knowledge and academic skills necessary for college readiness. The CRS are broad in nature, equipping students for general education college science courses, but are not intended to encompass all skills necessary for students entering majors that require specific science knowledge.	SAW Voting System: S = Strong Alignment A = Adequate Alignment W = Weak Alignment For example: S9, W1=Nine vertical team members found strong alignment and one found weak alignment.	As stipulated in the Texas Education Code, school districts are required to provide instruction in essential knowledge and skills at the appropriate grade levels. The science TEKS listed within this column apply to the essential knowledge for middle and high school students.	This section contains the comments made by the vertical team members.		To access the overall strength and weakness of the alignment, the following formula/rating was used. $S*5+A*3+W*1$ = rating score. A score of Strong > 40, Adequate < 40, and > 20, Weak < 20.
I. Nature of Science Scientific Ways of Learning and Thinking				29.08	Adequate
A. Cognitive skills in science	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Utilize skepticism, logic, and professional ethics in science.	A7, W3	6-3A, 7-3A, 8-3A, 6-7-8-3B, 6-7-8-2, I-3A, AQ-3A, ES-3A, P-3A, P-3B, P-3C, E-3A, B-3A, B-3B, C-3A	It was observed that the concept of ethics was not included anywhere (lack of mention of ethics & skepticism).	24	Adequate
2. Use creativity and insight to recognize and describe patterns in natural phenomena.	S6, A4	P-2C, ES-2C, B-8A, B-8B, ES-10C, B-2C, ES-11B, ES-11C, P-4D, P-7E, B-3D, A-2C, A-4C, A-5A, A-5B, A-5C, A-7A, A-8A, A-12B, ES-13C, ES-14A, ES-14B, ES-14C, ES-15B, B-7A, B-7B, B-7C, B-7D, ES-15E, 6-2E, 8-2E, C-5D, I-2C, E-2C, E-7D, E-8D, AQ-2D, AQ-5B, AQ-5C, 8-10B, 8-7B, 8-9D, 8-11D	There was some concern that the strongest alignment was in the optional courses such as ES, ESS, and astronomy. There is a lack of consistency in courses, and not all students will take environmental and AQ courses where the majority of evidence is found.	42	Strong
3. Formulate appropriate questions to test understanding of natural phenomena.	S2, A8	7-2B, B-2A, ES-2A, B-2D, P-2A, P-4D, A-2A6-2A, 8-2A, I-2A, C-2A, AQ-2A, E-2A,	While only in one SE at each grade and course level, it is ongoing.	34	Adequate
4. Rely on reproducible observations of empirical evidence when constructing, analyzing, and evaluating explanations of natural events and processes.	S7, A3	7-2D, 7-3A, P-2B, P-2C, P-4A, B-3A, B-3B, ES-3A, ES-3B, A-2A, A-2B, A-2C, A-3A, A-3C, A-4A, A-5A, A-5B, A-7A, 6-3A, 8-3A, E-3A, I-3A, AQ-3A, C-3A, 6-2E, 8-2E, C-2D, I-2C, E-2C, AQ-2D, AQ-5A, AQ-4C	No change. Language is vague in the TEKS; language in TEKS is clear but does not align exactly with CRS standards.	44	Strong
B. Scientific inquiry	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Design and conduct scientific investigations in which hypotheses are formulated and tested.	S10	7-2A, 7-2B, B-2A, B-2B, B-2C, P-2A, P-2B, ES-2A, ES-2B, ES-2C, A-2A, A-2B, A-2C, 6-2B, 8-2B, E-2A, I-2A, C-2A, AQ-2A	No change. Specific language is found in every grade level.	50	Strong

C. Collaborative and safe working practices	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Collaborate on joint projects.	W10		Not mentioned in TEKS. No evidence was found.	10	Weak
2. Understand and apply safe procedures in the laboratory and field, including chemical, electrical, and fire safety and safe handling of live or preserved organisms.	S1, A9	7-1B, 7-4B, B-1A, B-1B, A-1A, A-1B, P-1A, P-1B, ES-1A, ES-1B, 6-1A, 8-1A, E-1A, I-1A, AQ-1A, C-1A, 6-4B	The CRS is much more specific than the TEKS. The TEKS need to add specificity by course and grade level. Language in the TEKS is not clear on where safety is taught.	32	Adequate
3. Demonstrate skill in the safe use of a wide variety of apparatuses, equipment, techniques, and procedures.	S1, A9	7-4A, B-2A, P-2A, P-4A, ES-2B, A-2A, A-2B, B-6H, A-5A, ES-11C, 6-1A, 8-1A, E-1A, I-1A, AQ-1A, C-1A, 6-4A, 6-4B, 8-4B	Evidence found was strong in both 6th and 8th grade but weak in HS.	32	Adequate
D. Current scientific technology	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Demonstrate literacy in computer use.	W10,	ES-2B, ES-2E, P-2A, P-2D, P-4A, B-2A, A-2A, 7-4A, AQ-4C	We need an operational definition of what Computer Literacy means in this context (that is, Word processing, data analysis, and electronic presentation). We need to define computer use; does technology infer computers? (that is, include PowerPoint presentations). No Evidence was found. The CRS standard is not in the domain to teach in the science classroom. This standard is cross-disciplinary and should not be specified in science.	10	Weak
2. Use computer models, applications and simulations.	W10	ES-2B, 7-4A, B-3D, AQ-4C	Models as a whole are limited and computer application is not mentioned. See comments to D1 on computer literacy.	10	Weak
3. Demonstrate appropriate use of a wide variety of apparatuses, equipment, techniques, and procedures for collecting quantitative and qualitative data.	A10	B-2B, A-2B, 7-4A, ES-2B, ES-11C, 7-2C, A-5D, P-2A, P-2B, P-4A, P-5E, 6-4A, 8-4A, I-2A, AQ-2A, AQ-4C, C-2B, I-2B, E-2A, E-2B, AQ-2B	The concept is there but should be emphasized more. The concept could be strong if TEKS had amended information to include clearly written language on techniques, and procedures for collecting quantitative and qualitative data. TEKS language is vague in this instance.	30	Adequate
E. Effective communication of scientific information	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Use several modes of expression to describe or characterize natural patterns and phenomena. These modes of expression include narrative, numerical, graphical, pictorial, symbolic, and kinesthetic.	S3, A7,	7-2C, 7-2D, A-2D, A-4D, P-2D, P-3F, P-4A, P-4E, P-5F, P-7E, ES-2B, ES-2D, ES-2E, ES-11C, B-6A, B-6E,, 6-2D, 6-3C, 8-2D, 8-3D	All the modes are mentioned but the kinesthetic mode is not specified. The kinesthetic is the weakest mode of expression. The language is not explicit in the TEKS, and the modes of expression are general and interdisciplinary in nature and not specific to science.	36	Adequate
2. Use essential vocabulary of the discipline being studied.	A7, W3,	7-14A, 7-12D, B-4A, B-6C, B-8A, B-8C, P-4B, P-5F, P-6B, A-7B, A-7C, A-8D, ES-10C, ES-10E, ES-13C, ES-14A, IMPLIED THROUGHOUT C,I,E,6,8,AQ	The academic vocabulary found throughout the student expectations. Students will need to use these terms to meet the expectations of the TEKS It is inferred that vocabulary is taught within the SE's. The use of academic vocabulary is implied although it is not explicitly listed in the TEKS.	24	Adequate

II. Foundation Skills Scientific Applications of Mathematics				14.78	Weak
A. Basic mathematics conventions	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand the real number system and its properties.	W10,	ES-2D,C-2C, 8-AB, C-8ABCD, 8-6AB, C-11C, I-4AB, C-10C, C-9AB, I-5ABD, I-7C, 8-5E, AQ-5B, E-7A	General Section Comment: There should be a strong statement that these are MATH concepts and the emphases should be in Math. It is assumed that students bring this background to the class. This is taught in the mathematics class and is not part of the science TEKS. This is another discipline. It is assumed that students will use the real number system. The group questions whether this item is necessary. More math is needed to understand the scientific concepts.	10	Weak
2. Use exponents and scientific notation.	A3, W7	P-2B, ES-2D,C-2C, AQ-2C, C-8A, C-9A	No comment.	16	Weak
3. Understand ratios, proportions, percentages, and decimal fractions, and translate from any form to any other.	W10,	7-2D, B-6F, ES-2D, ES-7B,C-8A, C-8D, C-9AB, C-2C	More opportunities could be provided for skill development and practice. It is unknown if these specific math skills are taught in the science classroom (e.g., Implied and not specified).	10	Weak
4. Use proportional reasoning to solve problems.	W10	B-6F, ES-2D,C-2C, C-8ABD, C-9AB, I-7C	This concept is not actually listed but is used often in physics.	10	Weak
5. Simplify algebraic expressions.	A2, W8	P-2E, P-3F, ES-2D,, I-4A, I-4B, I-4C, I-4D, I-4E, I-5A, I-5B, I-5D, 8-6B, E-7B	Algebraic expressions are a prerequisite for the science classroom.	14	Weak
6. Estimate results to evaluate whether a calculated result is reasonable.	W10,	7-2E, ES-2C, P-3A, B-3A	This skill is weak in students and needs to be strongly emphasized/addressed.	10	Weak
7. Use calculators, spreadsheets, computers, etc., in data analysis.	A1, W9,	7-4A, A-2C, P-4A, ES-2B, ES-11C, B-2A,8-4A, 6-4A	This skill is done more than it is specified in the TEKS. This item is used more than it is spelled out in the TEKS. This skill is Implied but not outlined in the TEKS.	12	Weak
B. Mathematics as a symbolic language	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Carry out formal operations using standard algebraic symbols and formulae.	A4, W6	P-2E, P-3F, ES-2D,, I-4A, I-4B, I-4C, I-4D, I-4E, I-5A, I-5B, I-5D, E-7B, AQ-2C, C-2C	This concept is where it needs to be. It is implied by the formula chart required by the TAKS text but is not specifically stated in the TEKS. TEKS should specify the formula chart.	18	Weak
2. Represent natural events, processes, and relationships with algebraic expressions and algorithms.	A6, W4	P-5B, P-5C, P-6C, ES-7B,E-7B, I-4ABCDE, I-5ABD	No comment.	22	Adequate
C. Understand relationships among geometry, algebra, and trigonometry	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand simple vectors, vector notations, and vector diagrams, and carry out simple calculations involving vectors.	S5, A5	P-3F, P-4E,I-4A, I-4B, 8-6C	No comment.	40	Strong
2. Understand that a curve drawn on a defined set of axes is fully equivalent to a set of algebraic equations.	A9, W1	P-2C, P-4A, ES-10D, A-2C,I-4B	No comment.	28	Adequate

3. Understand basic trigonometric principles, including definitions of terms such as sine, cosine, tangent, cotangent, and their relationship to triangles.	W10		This concept is used regularly in physics. It is not specified in the TEKS but should be. This is assumed knowledge in physics.	10	Weak
4. Understand basic geometric principles.	W10		This should be specified in physics and spelled out. The concepts of surface area and volume ratios are used in physics and biology. It is implied knowledge in physics, biology, and ES.	10	Weak
D. Scientific problem solving	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Use dimensional analysis in problem solving.	W10,	C-2C,	The concept is not specified but is really important. This is a very important skill and needs to be stressed more often.	10	Weak
E. Scientific application of probability and statistics	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand descriptive statistics.	A1, W9,	7-2A, 7-2D, ES-2D, B-2B,AQ-2C	This item is used more than it is spelled out.	12	Weak
F. Scientific measurement	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Select and use appropriate Standard International (SI) units and prefixes to express measurements for real-world problems.	A1, W9,	7-2C, P-2B, A-6E,6-2C, 8-2C	Spelled out in physics and not in chemistry.	12	Weak
2. Use appropriate significant digits.	A1, W9	ES-2D,C-2C, AQ-2C	The concept is found in only a few courses but it is specific.	12	Weak
3. Understand and use logarithmic notation (base 10).	W10,	ES-9D, E-7A, C-10G	Concept not taught but is necessary and needs to be strengthened. Emphasis should be in Math but there should also be examples in science. It is necessary in ES, but not stated specifically.	10	Weak

III. Foundation Skills Scientific Applications of Communication				15	Weak
A. Scientific writing	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Use correct applications of writing practices in scientific communication.	A2, W8,	P-2D, A-2D, 7-2F, ES-2E, B-2D, ES-3F,6-2F, 8-2F, I-2E, C-2E, E-2D, AQ-2E, 6-4A, 8-4A	If the TEKS does not specifically say writing, then teachers will not make them write. We need a TEKS on the use of Journals in science. Again, when it doesn't say writing, teachers won't do writing. The cross disciplinary standards and all of the subjects should be modeled after E-2D.	14	Weak
B. Scientific reading	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Read technical and scientific articles to gain understanding of interpretations, apparatuses, techniques or procedures, and data.	W10,	B-3C, A-13A, A-13B, A-13C, ES-3C, ES-3F, A-14B, P-3D, P-3E	While the reading of articles is not specifically stated, the implication is in multiple TEKS where students are expected to analyze and evaluate current scientific data. It is not explicitly used.	10	Weak
2. Set up apparatuses, carry out procedures, and collect specified data from a given set of appropriate instructions.	A10	B-2A, B-2B, P-2B, P-2C, ES-2A, ES-2B, A-2A, I-2AB, AQ-2AB, E-2A, E-2B, C-2A, AQ-4C	No comment.	30	Adequate
3. Recognize scientific and technical vocabulary in the field of study and use this vocabulary to enhance clarity of communication.	W10,	A-2D, P-2D, ES-2E	Concept is implied but not specified in the TEKS. Reading comprehension is an essential skill for student success on TEKS.	10	Weak
4. List, use and give examples of specific strategies before, during, and after reading to improve comprehension.	W10,	ES-3F	Not present in the TEKS!! However, it is needed in science. Reading strategies need to be addressed.	10	Weak
C. Presentation of scientific/technical information	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Prepare and present scientific/technical information in appropriate formats for various audiences.	W10	ES-3E, ES-3F, P-2D,E-2D, AQ-2E, 6-2F, 8-2F	No comment.	10	Weak
D. Research skills/information literacy	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Use search engines, databases, and other digital electronic tools effectively to locate information.	W10,	B-2B, ES-3B, A-14A, A-14B, A-14C, A-14D, P-3D	Concept is implied but not specified. Examples given do not specify the source of information.	10	Weak
2. Evaluate quality, accuracy, completeness, reliability, and currency of information from any source.	A8, W2,	A-3A, A-3B, A-3C, P-3C, ES-3A, ES-3B, B-3B, 7-3B, B-2A, B-2B,6-3E, C-2D, 8-3E, I-3A, I-3B, I-3C, AQ-3A, AQ-B, C-3A, C-3B, C-3C, E-3A, E-B, E-C, 8-3C, 8-3B, AQ-2C, AQ-2D, AQ-5A	The TEKS do not specify all of the qualities expressed within this standard. The TEKS vaguely address this standard.	26	Adequate

IV. Science, Technology, and Society				21.2	Adequate
A. Interactions between innovations and science	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Recognize how scientific discoveries are connected to technological innovations.	A6, W4	7-3C, P-3D, P-3E, B-3C, A-3C, A-4D, ES-3C, ES-3E, P-8C, P-8D, P-7F, P-9D, ES-9D, ES-12D	Addressed but the TEKS do not provide many specific examples. There are more opportunities to make the science real to the students.	22	Adequate
B. Social ethics	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand how scientific research and technology have an impact on ethical and legal practices.	W10	P-3D, B-3C, ES-3C, A-3C, ES-12D, E-9E, E-F, AQ-12E	Concept implied but not specified.	10	Weak
2. Understand how commonly held ethical beliefs impact scientific research.	W10	ES-5D, ES-3C	No comment.	10	Weak
C. History of science	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand the historical development of major theories in science.	S2, A8	7-3C, P-3D, P-8C, P-8D, A-4A, A-4B, A-4C, B-7A, B-7B, B-7C, B-7D, B-7E, A-13A, A-13B, A-13C, ES-3E, ES-5D, ES-8A, ES-10AC-5A, C-6A, AQ-3C, 8-8D	What is the intent of 3E in high school and middle school subjects?	34	Adequate
2. Recognize the role of people in important contributions to scientific knowledge.	S1, A8, W1,	7-3C, P-3D, A-4B, ES-3E, B-6, 6-3B, 8-3C, I-3C, E-3E, AQ-3E, C-3E	There needs to be more examples of important people and under-represented groups in science. More inclusion of under-represented groups of scientists.	30	Adequate

V. Cross-Disciplinary Themes				30.67	Adequate
A. Matter/states of matter	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Know modern theories of atomic structure.	A9, W1	7-6A, 8-5A, C-6A, C-C, I-6B, I-6D	No comment.	28	Adequate
2. Understand the typical states of matter (solid, liquid, gas) and phase changes among these.	S1, A7, W2,	I-6A, I-7A, C-4B	Possibly add this concept to middle school. It is assumed that this is taught in earlier grades.	28	Adequate
B. Energy (thermodynamics, kinetic, potential, and energy transfers)	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand the Laws of Thermodynamics.	S4, A6	P-6E, P-6F, P-6G, ES-5B, I-5B, I-5C, I-5H, I-5I, C-11B, C-11C, C-11D	No comment.	38	Adequate
2. Know the processes of energy transfer.	S10	7-5A, 7-5B, B-9B, A-8A, A-10B, P-6A, P-6B, P-6D, P-6F, ES-4B, ES-9B, ES-13A, ES-14A, ES-14B, ES-14C, B-12A, B-12E, I-5A, I-5B, I-5C, I-5H, I-7A, 6-8B, C-11B, C-11C, C-11D, E-6B, E-C, E-D, 6-8D	No comment.	50	Strong
C. Change over time/equilibrium	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Recognize patterns of change.	S10	A-5A, A-5B, A-5C, A-7C, A-7D, A-8A, A-8B, A-8D, 7-2D, B-11A, B-7A, B-7B, P-2C, P-4D, P-5B, P-5C, ES-7B, ES-10D, ES-10E, ES-11D, C-4A, C-11C, E-8D, AQ-6B, AQ-5A, E-9B, E-7AD, E-4BC, 8-10B, AQ-12AB, 8-11D, 8-11C, 8-7D, I-7D, E-4E	No comment.	50	Strong
D. Classification	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand that scientists categorize things according to similarities and differences.	S10	B-4A, B-8A, B-8B, B-8C, A-5B, A-6A, A-6B, A-11D, A-9D, A-12C, P-4F, P-5F, P-7B, P-7C, P-8A, ES-5C, ES-5E, ES-7A, ES-10E, ES-12A, 7-9A, 7-10B,, 6-6A, 6-6B, 6-6C, 6-6D, 6-10A, I-6D, 6-12B, I-5E, E-4A, C-5A, C-5B, C-5C, C-5D	The idea of categories is inherent in all activities although it is not explicitly stated.	50	Strong
E. Measurements and models	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Use models to make predictions.	A1, W9	ES-4A, 7-14B, ES-5D, B-3D,, I-4B, I-4C, I-4D, I-4E, I-4F, 6-3C, 8-3D, I-5A, I-5B, I-5E, I-7F	The concept of making predictions is not addressed.	12	Weak
2. Use scale to relate models and structures.	W10,	6-3D, 8-3D	The CRS needs to be more clearly defined.	10	Weak
3. Demonstrate familiarity with length scales from sub-atomic particles through macroscopic objects.	W10	A-6B, A-6E	No comment.	10	Weak

VI. Biology				29.31	Adequate
A. Structure and function of cells	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Know that although all cells share basic features, cells differentiate to carry out specialized functions.	S9, A1	B-4A, B-4B, B-4D, B-5B, B-5C, 7-12D	No comment.	48	Strong
2. Explain in your own words how cells can be categorized into two major types prokaryotic and eukaryotic, and describe major features that distinguish one from the other.	A10	B-4A	The concept should be strengthened and added to middle school.	30	Adequate
3. Describe the structure and function of major sub cellular organelles.	S5, A5	7-12C, 7-12D, B-4B, B-4C	No comment.	40	Strong
4. Describe the major features of mitosis and relate this process to growth and asexual reproduction.	A2, W8	B-5A	No comment.	14	Weak
5. Understand the process of cytokinesis in plant and animal cells and how this process is related to growth.	A9, W1	B-5A, B-5D	The TEKS mention the cellular cycle but do not specifically use the term "cytokinesis."	28	Adequate
6. Know the structure of membranes and how this relates to permeability.	A10	B-4B, B-4C, 7-12C, 7-12D	Concept is implied in TEKS, but not specific.	30	Adequate
B. Biochemistry	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand the major categories of biological molecules lipids, carbohydrates, proteins, and nucleic acids.	A8, W2	B-5A, B-5C, B-6C, B-6A, B-9A, 7-6E	This concept should be addressed in chemistry as well.	26	Adequate
2. Describe the structure and function of enzymes.	A8, W2	B-9C, B-5C	Concept should be addressed in chemistry as well.	26	Adequate
3. Describe the major features and chemical events of photosynthesis.	S7, A3	7-6D, B-9B, 7-5A	Concept should be addressed in chemistry as well.	44	Strong
4. Describe the major features and chemical events of cellular respiration.	S7, A3	B-9B, 7-6D	Concept should be addressed in chemistry as well.	44	Strong
5. Know how organisms respond to presence or absence of oxygen, including mechanisms of fermentation.	W10	B-9B	Concept should be addressed in chemistry as well. Fermentation is not addressed. B9B does not include fermentation but addresses the other aspects.	10	Weak

6. Understand coupled reaction processes and describe the role of ATP in energy coupling and transfer.	W10	B-4C	Concept should be addressed in chemistry as well. This is inferred in biology.	10	Weak
C. Evolution and populations	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Know multiple categories of evidence for evolutionary change and how this evidence is used to infer evolutionary relationships among organisms.	A7, W3	B-7A, B-7D, ES-8B, B-7E	No comment.	24	Adequate
2. Recognize variations in population sizes, including extinction, and describe mechanisms and conditions that produce these variations.	A10	ES-8D, 7-11B, B-7C, B-7E, E-7A, E-4D, E-4E, 8-11C, AQ-11B	Environmental and aquatic courses are optional.	30	Adequate
D. Molecular genetics and heredity	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand Mendel's laws of inheritance.	A7, W3	B-6F, 7-11C, 7-14A, 7-14C, 6-12G, E-4E	The information presented is using the law without comprehension of the law.	24	Adequate
2. Know modifications to Mendel's laws.	W10		No evidence was found.	10	Weak
3. Understand the molecular structures and the functions of nucleic acids.	A8, W2	B-5A, B-5C, B-6A, B-6C, B-6E	No evidence was found.	26	Adequate
4. Understand simple principles of population genetics and describe characteristics of a Hardy-Weinberg population.	W10	E-4E	No evidence present in what the group reviewed.	10	Weak
5. Describe the major features of meiosis and relate this process to Mendel's Laws of Inheritance.	A9, W1	B-6G	No evidence was found.	28	Adequate
E. Classification and taxonomy	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Know ways in which living things can be classified based on each organism's internal and external structure, development, and relatedness of DNA sequences.	S4, A5, W1	B-8A, B-8B, B-8C, 7-11A, AQ-10A, 6-12A, 6-12B	Concept needs to be addressed in middle school. Little evidence present in what this group reviewed.	36	Adequate
F. Systems and homeostasis	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Know that organisms possess various structures and processes (feedback loops) that maintain steady internal conditions.	A4, W6	B-11A, 6-12CD	The concept should be addressed in environmental science. Little evidence present in what this group reviewed.	18	Weak

2. Describe, compare, and contrast structures and processes that allow gas exchange, nutrient uptake and processing, waste excretion, nervous and hormonal regulation, and reproduction in plants, animals, and fungi; give examples of each.	S7, A3	7-12F, 7-12G, 7-13A, 7-13B, B-10A, B-10B, B-10C, B-4B, B-4C, B-5D	No evidence present in what this group reviewed.	44	Strong
G. Ecology	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Identify Earth's major biomes, giving their locations, typical climate conditions, and characteristic organisms present in each.	S10	B-12C, 7-10A, 7-10B, ES-13D, ES-14A, ES-15A,6-12E, 6-12F, AQ-4A, E-4A, E-6B	Environmental and aquatic courses are optional, that is, a student could go to college without having the course or not being exposed to the content since 6th grade.	50	Strong
2. Know patterns of energy flow and material cycling in Earth's ecosystems.	S6, A4	B-12A, B-12E, ES-14B, ES-15D, 7-5A, 7-5B,AQ-6A, AQ-11A, 6-12F, E-6A, E-6B, E-6C, E-6D	Important concept and needs more clarification in CRS and TEKS.	42	Strong
3. Understand typical forms of organismal behavior.	A10	B-11B, 7-13A, 7-13B, 7-11B, E-4A, 8-11C, 6-12G, AQ-5CD, 8-11A	Concept wasn't addressed specifically. Not enough information in each grade level.	30	Adequate
4. Know the process of succession.	S5, A5	B-11D, ES-7A, 7-10C,E-8C	The concept could be stronger in environmental systems. Should be addressed more in environmental systems. Little evidence found within the subject matter this group reviewed.	40	Strong

VII. Chemistry				25.26	Adequate
A. Matter and its properties	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Know that physical and chemical properties can be used to describe and classify matter.	S10	I-6A, I-6C, I-6D, I-6E, C-4A, C-5A, 8-5C, 6-6A, 6-6C, C-4C	No comment.	50	Strong
2. Recognize and classify pure substances (elements, compounds) and mixtures.	A10	6-5B, 6-5D, C-4C, I-6B, I-6C	No comment.	30	Adequate
B. Atomic structure	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Summarize the development of atomic theory. Understand that models of the atom are used to help us understand the properties of elements and compounds.	S10	8-5A, 8-5B, C-6A, C-6B, I-7B, 8-3D	Chemistry TEKS language is stronger than the CRS standards.	50	Strong
C. Periodic table	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Know the organization of the periodic table.	A10	I-6B, I-6D, C-5A, C-5B, C-5C, C-5D, 8-5C	There should be more emphasis on the periodic table in IPC. The periodic table is missing from grade 6.	30	Adequate
2. Recognize the trends in physical and chemical properties as one moves across a period or vertically through a group	A10	I-6A, I-6D, C-5B, C-5C, C-5D, 8-5C	No comment.	30	Adequate
D. Chemical bonding	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Characterize ionic bonds, metallic bonds, and covalent bonds. Describe the properties of metals and ionic and covalent compounds.	W10	I-6B, I-6D, C-7A, C-7B	These concepts should be mentioned in chemistry and earth science. Courses never mention chemical bonding. Nothing in the TEKS requires a student to describe the properties of metals and ionic and covalent compounds. Bonding is not mentioned in grade 6 but chemical formulas are mentioned.	10	Weak
E. Chemical reactions	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Classify chemical reactions by type. Describe the evidence that a chemical reaction has occurred.	A10	6-6F, 8-5D, C-10F, C-11C, I-7D	The evidences is present; however, types are not articulated. Mention of "type" is not very strong.	30	Adequate
2. Describe the properties of acids and bases, and identify the products of a neutralization reaction.	A9, W1	7-6B, I-6C, C-7A, C-10E, C-10F, C-10G, C-10H	Found to be adequate if students take chemistry because IPC doesn't cover the material extensively.	28	Adequate
3. Understand oxidation-reduction reactions.	A2, W8	C-10F	The concept should be addressed in chemistry. Very important concept that is not covered extensively.	14	Weak

4. Understand chemical equilibrium.	W10	C-10H,	There is not enough information and should be included as part of the IPC TEKS; should be in chemistry as well.	10	Weak
5. Understand energy changes in chemical reactions.	A10	I-7D, I-7E, C-11A, C-11B, C-11C, C-11D, E-6A, E-6C, E-6D	Concept should be addressed in middle school TEKS.	30	Adequate
6. Understand chemical kinetics.	W10		This is a very important issue that is missing from within the TEKS and CRS.	10	Weak
F. Chemical nomenclature	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Know formulas for ionic compounds.	A10	C-7A	Concept should be further addressed in middle school.	30	Adequate
2. Know formulas for molecular compounds.	A10	C-7A	There should be consistency between covalent/molecular definitions and/or terminology.	30	Adequate
G. The mole and stoichiometry	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand the mole concept.	S2, A8	C-8A, C-9A	No comment.	34	Adequate
2. Understand molar relationships in reactions, stoichiometric calculations, and percent yield.	S3, A7	C-8C, C-8D, C-9B	The concept refers to molar relationships in the CRS and mass relationships in the TEKS. There is inconsistency in the terminology.	36	Adequate
H. Thermochemistry	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand the Law of Conservation of Energy and processes of heat transfer.	S2, A8	P-6D, P-6E, ES-9B, I-7D, C-11A, C-11B, C-11C, C-11D, C-11E, I-5E, 6-8D, 8-10A, 8-5D, E-6B	No comment.	34	Adequate
2. Understand energy changes and chemical reactions.	S5, A5	B-9B, C-11A, C-11B, C-11C, C-11D, I-7DE, 8-5D, 6-6F, E-6A, E-6C, E-6D, 6-8A, 6-8D	No comment.	40	Strong
I. Properties and behavior of gases, liquids, and solids	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand the behavior of matter in its various states solid, liquid, gas.	A10	C-4B, C-9AB, I-5E, I-6A	No comment.	30	Adequate
2. Understand properties of solutions.	A9, W1	I-6E, C-10B, C-10C, C-10D	Needs more coverage in the phases of chemistry, biology and environmental systems. Should be taught in biology, environmental systems, and chemistry.	28	Adequate
3. Understand principles of ideal gas behavior and kinetic molecular theory.	A4, W6	C-9A, C-11A	Kinetic molecular theory should be addressed when dealing with heat. The TEKS are more descriptive than the CRS language.	18	Weak
4. Apply the concept of partial pressures in a mixture of gases.	W10	C-9A,	Concept is never addressed in physics.	10	Weak

5. Know properties of liquids and solids.	A1, W9	C-10A, C-10B, C-10C, C-10D, C-10E, C-4B, I-6A	The concept should be further addressed in middle school.	12	Weak
6. Understand the effect of vapor pressure on changes in state; explain heating curves and phase diagrams.	W10		No information found in the TEKS or CRS from the assigned groups.	10	Weak
7. Describe intermolecular forces.	W10	I-6A	Not enough information in chemistry or IPC.	10	Weak
J. Basic structure and function of biological molecules proteins, carbohydrates, lipids, nucleic acids	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand the major categories of biological molecules proteins, carbohydrates, lipids, and nucleic acids.	A9, W1	7-6E, B9A, B-6A	No information found in aquatic or environmental systems.	28	Adequate
K. Nuclear chemistry	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand radioactive decay.	W10	ES-7B, ES-9A1-7E	Concept should be in physics and chemistry. Should be introduced in other courses, such as physics and not just in optional courses. Not enough information.	10	Weak

VIII. Physics				25.38	Adequate
A. Matter	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Demonstrate familiarity with length scales from sub-atomic particles through macroscopic objects.	W10	P-2B, A-6A, A-6B, A-6C, A-6D, A-6E	Not enough information in the group assignment.	10	Weak
2. Understand states of matter and their characteristics.	A10	C-4B, C-9A, C-9B, I-5E, I-6A	No comment.	30	Adequate
3. Understand the concepts of mass and inertia.	S1, A9	P-4D,6-11C, I-4C, I-4E, 8-6D	No comment.	32	Adequate
4. Understand the concept of density.	S4, A5, W1	ES-10B,C-4A, 6-6B, I-6C	No comment.	36	Adequate
5. Understand the concepts of gravitational force and weight.	S6, A4	P-4D, P-5B, ES-5A, A-9C, 6-11C, I-4F	No comment.	42	Strong
B. Vectors	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand how vectors are used to represent physical quantities.	A10	P-3F, P-4E	Adequate due to language issues, but fine as is.	30	Adequate
2. Demonstrate knowledge of vector mathematics using a graphical representation.	A10	P-3F, P-4E	Adequate due to language issues, but fine as is.	30	Adequate
3. Demonstrate knowledge of vector mathematics using a numerical representation.	A10	P-3F, P-4E	Adequate due to language issues, but fine as is.	30	Adequate
C. Forces and Motion	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand the fundamental concepts of kinematics.	S10	P-4A, P-4B, P-4C, P-4F,I-4A, I-4C, I-4D, I-4E, 8-6A, 8-6B, 8-6C, 8-6D, 6-7AB	No comment.	50	Strong
2. Understand forces and Newton's Laws.	S5, A5	P-4D, P-4E, P-4F, P-5A, P-5B, 6-7A, 6-7B, 8-6A, 8-6D, I-4C, I-4D	Newton's Law terminology needs to be used in IPC.	40	Strong
3. Understand the concept of momentum.	S8, A2	P-6C, P-6D,8-6D, I-4E	No comment.	46	Strong
D. Mechanical Energy	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand potential and kinetic energy.	S7, A3	P-6A, P-6B, P-6C, P-6D, P-6E, 6-8A, I-5A, I-5B, C-11A	No comment.	44	Strong
2. Understand conservation of energy.	S4, A6	P-6A, P-6B, P-6D, P-6F, I-5D	With IPC being phased out, it will not be covered in both subject areas of physics and IIPC.	38	Adequate
3. Understand the relationship of work and mechanical energy.	S1, A9	P-6A, P-6C	Some work needs to be put back into the development of the IPC language within the CRS and the TEKS because it is currently being taught.	32	Adequate
E. Rotating systems	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating

1. Understand rotational kinematics.	W10		Needs to be written back into TEKS.	10	Weak
2. Understand the concept of torque.	W10		Needs to be written back into TEKS.	10	Weak
3. Apply the concept of static equilibrium.	W10		Needs to be written back into TEKS.	10	Weak
4. Understand angular momentum.	W10		Needs to be written back into TEKS.	10	Weak
F. Fluids	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand pressure in a fluid and its applications.	W10		Needs to be written back into TEKS.	10	Weak
2. Understand Pascal's Principle	W10		Needs to be written back into TEKS.	10	Weak
3. Understand buoyancy.	W10	I-6C	Needs to be written back into TEKS. Why? Not enough language in IPC.	10	Weak
4. Understand Bernoulli's principle.	W10		Needs to be written back into TEKS. Bernoulli's principle should be placed back into IPC in CRS language and TEKS language.	10	Weak
G. Oscillations and waves	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand basic oscillatory motion and simple harmonic motion.	W10	P-7A, P-7B	Needs to be written back into TEKS. The term "simple harmonic motion" is never mentioned in TEKS.	10	Weak
2. Understand the difference between transverse and longitudinal waves.	A8, W2	P-7C, I-5G	Needs to be written back into middle school TEKS. Language in IPC needs to be improved and the topic needs to be discussed in middle school CRS and TEKS.	26	Adequate
3. Understand wave terminology wavelength, period, frequency, amplitude.	S5, A5	P-7B, C-6B, I-5G, 8-8B	More specificity is needed in the middle school language.	40	Strong
4. Understand the properties and behavior of sound waves.	A10	P-7C, P-7D, I-5G	Needs to be written back into middle school TEKS. Needs middle school coverage, assuming material covered in physics.	30	Adequate
H. Thermodynamics	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand the gain and loss of heat energy in matter.	S9, A1	P-6E, P-6F, I-5E, 6-8C, C-11A, C-11B, C-11C	No comment.	48	Strong
2. Understand the basic laws of thermodynamics.	S6, A4	P-6E, P-6G, ES-9B, ES-10B, C-11A, C-11B, C-11C, I-5 D, 6-8B	No comment.	42	Strong
I. Electromagnetism	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Discuss electric charge and electric force.	S4, A5, W1	P-5C, P-5DI-4G, I-5C	No evidence in middle school	36	Adequate

2. Gain qualitative and quantitative understandings of voltage, current, and resistance.	A1, W9	P-5E, I-5F	Language should be more definitive in physics. No evidence found in middle school. Language in IPC is weak.	12	Weak
3. Understand Ohm's Law.	W10	P-5E,	Concept is never specifically mentioned in the TEKS. Needs to be added to IPC.	10	Weak
4. Apply the concept of power to electricity.	W10	P-5F,	Concept is never specifically mentioned in the TEKS. Needs to be added to IPC.	10	Weak
5. Discuss basic DC circuits that include voltage sources and combinations of resistors.	W10	P-5E, I-5F	Concept is never specifically mentioned in the TEKS. Needs to be strengthened in IPC.	10	Weak
6. Discuss basic DC circuits that include voltage sources and combinations of capacitors.	W10	P-5E, I-5F	Concept is never specifically mentioned in the TEKS. Needs to be strengthened in IPC.	10	Weak
7. Understand magnetic fields and their relationship to electricity.	A3, W7	P-5D, P-5F, ES-9D, ES-9E, ES-10A, I-5C	Needs to be added to IPC.	16	Weak
8. Relate electricity and magnetism to everyday life.	A2, W8	P-5D, I-5F, I-5I	Needs to be strengthened in IPC.	14	Weak
J. Optics	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Know the electromagnetic spectrum.	A10	P-8B, 8-8B, I-5G, C-6B	The concept could be brought out in astronomy.	30	Adequate
2. Understand the wave/particle duality of light.	S1, A9	P-8A, C-6A, 8-8B	No comment.	32	Adequate
3. Understand concepts of geometric optics.	S7, A3	P-7E, 7-7C	No comment.	44	Strong

IX. Earth and Space Sciences				32.75	Adequate
A. Earth systems	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Know the major features and characteristics of atmosphere, geosphere, hydrosphere, and biosphere.	S5, A5	B12A, B12C, 79A, ES-6A, ES-6B, ES-6C, ES-6D, ES-13A, ES-13B, ES-13C, ES-13D, ES-14A, ES-14B, ES-14C, ES-15A, ES-15B, ES-15C, ES-15D, ES-15E, ES-10B, ES-10C, ES-10E, ES-11A, ES-11B, E-4A, E-4C, 8-10A, 8-10B, 8-10C, AQ-5D, AQ-5A	More specific within middle school TEKS.	40	Strong
2. Understand relationships and interactions among atmosphere, geosphere, hydrosphere, and biosphere.	S3, A7	B12A, B12C, 79A, ES-6A, ES-6B, ES-6C, ES-6D, ES-13A, ES-13B, ES-13C, ES-13D, ES-14A, ES-14B, ES-14C, ES-15A, ES-15B, ES-15C, ES-15D, ES-15E, ES-9B, ES-10F, ES-11A, ES-11D, 78A, 78B, 78C, 8-10A, 8-10B, 8-10C, E-4A, E-4B, E-6A, I-5H, AQ-9C, 6-12E, 8-11E	No comment.	36	Adequate
3. Possess a scientific understanding of the history of Earth's systems.	A10,	ES-4A, ES-4B, ES-4C, ES-5A, ES-5B, ES-5D, ES-6A, ES-6B, ES-6C, ES-6D, ES-7A, ES-7B, ES-7C, ES-8A, ES-8D, ES-10F, ES-15B, 8-8D, 8-9A	More is needed on the influence of life and composition of the atmosphere; Needs more on Earth history, especially the history of life and tectonics.	30	Adequate
4. Utilize the tools scientists use to study and understand the Earth's systems.	S1, A8, W1	ES-2B, ES-7A, ES-7B, ES-7C, ES-11C, 8-4A, 6-4A, AQ-4C, E-4B	Aquatic and environmental systems are optional courses.	30	Adequate
B. Sun, Earth, and moon system	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand interactions among the sun, Earth, and moon.	S6, A4	A6A, A6B, A9C, P-5B, ES-4B, ES-4C, ES-9E, ES-13B, ES-13D, ES-14A, ES-14B, ES-14C, 8-7A, 8-7B, 8-7C, I-4F, 6-11A, 6-11C	No comment.	42	Strong
2. Possess a scientific understanding of the formation of the Earth and moon.	S1, W9	ES-4B, ES-4C, ES-5A, ES-5B, ES-5D, 8-8D, 6-11C	Astronomy skipped all around it. Doesn't specify formation of the Earth and the Moon.	32	Adequate
C. Solar system	SAW Votes	TEKS Correlations	Comments from Committee	Section Score	Individual Section Alignment Rating
1. Describe the structure and motions of the solar system and its components.	S2, A8	A6B, A7A, A7B, A7C, A7D, A9A, A5A, A5B, ES-5A, ES-5C, ES-5E, P-5B, 6-11B, 8-8A, 6-11C, I-4F	IPC not very strong and in grade 8 it doesn't really talk about components.	34	Adequate
2. Possess a scientific understanding of the formation of the solar system.	A1, W9	ES-5A, ES-5B, ES-5D, 8-8D	The solar system is in only one course in high school. Grade 8 talks about formation of universe not solar system.	32	Adequate
D. Origin and structure of the universe	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand scientific theories for the formation of the universe.	A8, W2	A13A, A13B, A13C, ES-4A, ES-4B, ES-4C, 8-8D	Only one place it's taught.	26	Adequate
2. Know the current scientific descriptions of the components of the universe.	S1, A9	A6D, A12A, A12B, A12C, A9D, A10A, ES-4B, ES-4C, ES-5A, ES-5C, ES-5E, ES-5F, 8-8A, 6-11B	More representation in high school is needed.	32	Adequate
E. Plate tectonics	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Describe the evidence that supports the current theory of plate tectonics	S1, A8, W1	ES-10A, ES-10B, ES-10C, ES-10E, ES-11B, ES-9B, 8-9A, AQ-8B	No comment.	30	Adequate
2. Identify the major tectonic plates.	A3, W7	ES-10E, AQ-8B	"Identify the major tectonic plates" needs to be written into TEKS.	16	Weak

3. Describe the motions and interactions of tectonic plates.	S4, A6	ES-10C, ES-10D, ES-10E, AQ-8B, 8-9B, 8-9C	No comment.	38	Adequate
4. Describe the rock cycle and its products.	S5, A5	78B, ES-9C, ES-12A, ES-10B, ES-10C,6-10A, 8-9C, E-4B	The rock cycle not covered in ES; the references are tangential at best.	20	Adequate
F. Energy transfer within and among systems	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Matter and energy in the Earth system.	S4, A6	A8C, A10B, ES-9A, ES-9B, ES-9E, ES-10B, ES-14A,6-5C, 6-10C,I-5H, I-5D, I-5E, I-5G, E-6A, E-6B, E-6C, E-6D, I-7A, 8-10A, AQ-11A	CRS standard is vague.	38	Adequate
2. Give examples of effects of energy transfer within and among systems.	S9, W1	ES-9B, ES-10B, ES-14B, ES-14C, P-6E, P-6F, 6-8B, 6-10C, 8-10A, I-5H, I-5D, I-5E, I-5G, E-6A, E-6B, E-6C, E-6D, I-7A, AQ-11A, C-11A, C-11B	No comment.	48	Strong

X. Environmental Science				25.13	Adequate
A. Earth systems	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Recognize the Earth's systems.	S9, A1	7-9A, 7-8B, 7-8C, A-9A, ES-11B, ES-11C, ES-13A, B12C, ES-9C, ES-10F, E-4A, E-4B, E-4C, E-4D, E-4E, AQ-6B, 8-11B, E-8D, C-10A, 6-12D, 6-12F, C-11A, C-11B, AQ-9A, AQ-9B, AQ-9C, AQ-5D,	Concept inferred but not specified.	48	Strong
2. Know the major features of the geosphere and the factors that modify them.	S2, A8	7-8B, 7-8C, 7-9A, ES-9A, ES-9B, ES-10B, ES-10C, ES-10E, ES-11A, ES-11B, 8-10A, I-5H, AQ-4A, 8-9D, AQ-9C	No comment.	34	Adequate
3. Know the major features of the atmosphere.	A8, W2	ES-13C, ES-13D, ES-14B, 8-10B, AQ-4A, AQ-6B, E-8B, 8-10A, E-8A, E-9A, E-9B, I-7F, 6-10C	No specific language given.	26	Adequate
4. Know the major features of the hydrosphere.	A6, W4	ES-6B, ES-13A, ES-15D, ES-13B, ES-14C, ES-15C, ES-11D, 7-8C, 8-10C, E-4B, E-9B, AQ-6D, AQ-11A, AQ-4A, AQ-4B, AQ-5A, AQ-6A, AQ-7A, AQ-9C	Only covered in 8th grade unless student takes aquatic science.	22	Adequate
5. Be familiar with Earth's major biomes.	A7, W3	B-12C, 7-10B, E-4A, E-4C, AQ-6B	More specification is needed in TEKS about which biomes.	24	Adequate
6. Describe the Earth's major biogeochemical cycles.	A8, W2	B-12A, ES-15D, ES-9B, ES-10F, ES-13C, ES-13D, E-4B, E-4C, 8-11D, AQ-6A	TEKS needs more on the atmosphere.	26	Adequate
B. Energy	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Understand energy transformations.	S4, A6	7-5A, 7-5C, 7-5D, B-12A, B-12E, B-9B, P-6A, P-6D, P-6E, ES-4B, ES-9A, ES-14A, ES-14B, ES-14C, ES-7B, ES-9B, ES-9E, 6-9A, 6-9B, 6-9C, E-6A, E-6B, E-6C, E-6D, I-5E, I-5H	TEKS should be straight forward (e.g., "understand energy such as...").	38	Adequate
2. Know the various sources of energy for humans and other biological systems.	S5, A5	7-5A, 7-5C, 7-5D, B-12E, B-12A, B-9B, ES-12A, ES-12B, ES-12C, ES-12DE-5D, E-6A, E-6B, E-6C, E-6D, I-5H, I-5I, 6-9A, 6-9B, AQ-11A	No comment.	40	Strong
C. Populations	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Recognize variations in population sizes, including human population and extinction, and describe mechanisms and conditions that produce these variations.	A10	7-11B, 7-11C, 7-11D, B-7B, B-11D, ES-11D, ES-11E, ES-8D, 6-12F, 8-11B, 8-11C, E-7A, E-7B, E-7D, AQ-11B	No comment.	30	Adequate
D. Economics and politics	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating
1. Name and describe major environmental policies and legislation.	W10	ES-12D, E-9F, AQ-12E	If student doesn't take elective classes, they are never exposed to this information.	10	Weak
2. Understand the types, uses and regulations of the various natural resources.	A7, W3	ES-12A, ES-12B, ES-12C, ES-12D, ES-12E, E-9F, AQ-12E, 6-9B, E-5D, I-5I	The TEKS provides information on types and uses of various natural resources, but not on regulations.	24	Adequate
E. Human practices and their impacts	SAW Votes	TEKS Correlations	Comments from Team Members	Section Score	Individual Section Alignment Rating

1. Describe the different uses for land (land management).	A3, W7	ES-11D, ES-12A, ES-12B, ES-12C, ES-12D, E-5A, E-9D	Missing soil references. Would like to see coverage someplace other than environmental science.	16	Weak
2. Understand the use and consequences of pest management.	W10	E-9E	Would like to see coverage someplace other than environmental science.	10	Weak
3. Know the different methods used to increase food production.	W10		Should at least be covered in environmental science.	10	Weak
4. Understand land and water usage and management practices.	A2, W8	ES-11D, ES-12A, ES-12B, ES-12C, ES-12D, ES-13A, E-5B, E-5F, AQ-12A, AQ-12D	Missing soil references and a discussion of water pollution Only available in optional courses. Too many concepts are found within 8th grade Student Expectations	14	Weak
5. Understand how human practices affect air, water, and soil quality.	A10	7-8, ES-13D, ES-11D, ES-12A, ES-12C, ES-12D, ES-13C, ES-14A8-11D, 8-11E, E-8D, E-9A, E-9B, E-9C, E-9D, E-9E, AQ-7C, AQ-12A, AQ-12D, AQ-12C, I-7F	No comment.	30	Adequate