

Emailed Comments on Career and Technical Education Course Equivalencies

May 2018

1.

Reasons why auto should be worth a science credit

- 1) We learn about science. topics such as speed density, acceleration, electric principles such as resistance, how batteries work and more. we learn about pascals law and more scientific concepts.
- 2) It is a practical application of science. we take all these concepts we have learned and apply them to cars. we learn about the ideal air fuel mixture, manifold pressure, compression ratio. it is a much more practical application of science. because of this class i have gained the ability to not need a mechanic I can fix cars by myself.
- 3) I would benefit from auto being a science credit because auto is a very grueling class you have to work very quickly and precisely. CTE credits don't look very good on a collage application. however science looks much better on a transcript and gives us the credit we deserve.

2.

These are some reasons that Auto shop should be worth science credits. First because we learn about combustion. Second we learn about how to liquefy (vulcanize) rubber to patch a tire. Third we learn about techniques used to calculate engine info based on changes in the manifold absolute pressure and other variables. I would benefit from this because everybody needs science credits to graduate.

3.

I think that Auto Tech should receive a science credit because not only are we learning how to repair things like batteries and working with chemicals, but we are also being taught the chemical process behind it. For example; when I learned how to patch a tire I learned that we are not gluing the patch to the tire, but actually creating a vulcanizing compound between the glue and the patch which binds them together. Another reason why Auto Tech should earn science credits is because we deal with a great deal of electrical work next to mechanical. We are taught how to repair and diagnose problems in batteries as well as learning how batteries work chemically. I would benefit from a science credit in auto class because I'm taking physics next year, and having 5 science credits would look pretty good to a university considering letting me in. Thank you for your time.

4.

I would like to get a science credit out of auto class . The reasons i thinks we should get a science credit is because we have to measure harmonic frequency and displacement on performance engines. The second reason is we deal with all sorts of friction and metal wear. we deal with metal surfaces heating and wearing as the rub and finding the proper lubrication for them. The last reason is we deal with Pascal's Law

5.

I believe that Auto technology should count towards a science credit because in auto shop we dont only work on cars but we learn about how to make cars get good emissions and how to test it as well as fix it. we also learn how atmospheric pressure affects how an engine performs.

6.

Hello Mrs. Drake, I wanted to email in regards to automotive science credit.

One reason I think that getting science credit from an automotive class is because cars are very complicated just like science, Also I think that we are learning more that what science class has to offer because there isn't many schools that do an automotive class for students.

Another reason that I think we should get science credit from an automotive class is because this class is more hands on and we are always hands on and learning about how to weld and we are currently in the process of building project electric hot rod cars which you would never be able to do in a regular science class.

7.

As the Automotive Instructor for Edmonds School District I can say not only should my students receive Science credit for their studies, they should not have to work with their counselors to get it. (Currently my students can only receive science credit if they work it out with a counselor.)

In a perfect world a student would receive .5 CTE credit and .5 Science credit for each period of a year long Automotive class.

Last week I did an entire lesson in my second period class on Vulcanizing rubber so that students could understand how the tire patch was bonded to the inside of a tire.

Today was all about ohms law to describe how electricity flows in automotive systems... And that was in the basic (Exploratory) class which isn't even on the list for classes getting Science credit!

Where can you find a lesson on Pascal's Law or Hydroscopic and Hydrophobic liquids? Just look at the brakes lesson from 5th period last week.

Then there is the diagnostic strategy where for each problem on each car you conduct an investigation to gather evidence to determine the problem. You are not allowed to replace a part of a car without proving you have discovered the problem. You don't get to just plug in a new part and hope you fixed it.

When I worked with the Boeing Teachers Fellowship as soon as they found out I taught automotive they placed me with the two science teachers because they knew we would have the most in common when designing lessons!

I could talk for days about how entwined the two subjects are. I wish I could be at the community forum next week but with a newborn at home there is no way I can make it there.

Thank you for your time and consideration.

Bryan Robbins
MHS Automotive

8.

i am emailing you on why i think automotive class should also be counted as a science class.

I think auto should be counted as a science credit because the terms we use and the things we learn in the class are very similar to what we would use in a science class, like learning how to use electricity to power the cars we work on, or we have to use science to do things like balance a tire by having to measure the diameter and width so that we can use weights to make it so that the tire is perfectly balanced.

also this year automotive technology is counting as my science credit, and so far i am enjoying it more than a science class because i am learning everything i would in a science class while also im not stuck sitting in a classroom because i am always working in the shop keeping myself busy so i'm not getting distracted like i would sitting in a class for two hours.

9.

Hello! I am a Senior at Meadowdale HS and a member of its automotive program. I am sending you this email in regards to having this class also count as a science credit, and here are my reasons why.

In the class we learn about electrical systems in batteries and vehicles and how they work, along with how to test them for continuity and resistance.

Another reason I provide is that we have built several electric vehicles in the class, changing out model T cars to be electric vehicles, which is something very few students get to do, especially in science classes.

I believe we deserve the science credit because we work in the auto shop with different chemicals that the average Joe knows nothing about we also learn how to detect certain chemical how to deal with dangerous chemical

10.

One reason why Auto should be a science credit is simply the operation of a combustion engine. Combustion of a fuel creates high temp. and pressure gases, which expand. The gases are used to move a piston, or the engine itself, doing useful work. Internal combustion engines can be powered by any fuel that can be combined with an oxidizer in the chamber. This is part of what we learn in Automotive class.

Another reason to count it as science credit is learning to use "vulcanize" to liquefy rubber to patch tires by combing the rubbers together.

It's important to me because i have lots of CTE credits and i would like Science credits to count instead as it looks better on college transcripts.

11.

I believe that the auto class should count as a science Credit because we learn lots of things that are beneficial to a science career, and many other science related aspects of life. In AutoShop I have learned about abrasion, currents, continuity, caster and camber, compression, and many other terms that have helped me understand how to be careful and I have already used most of these terms in my every day life. This would help me because I already passed my chemistry class when I was a sophomore, and now I need half a credit of science, but I do not see how astronomy can help me more than auto shop could if autoshop counted as a science credit.

12.

i think we should get one science credit for auto because we learn the scientific way things work and determine how to adjust them through process of elimination. we learn how a tire patch works, we put a compound solution on the tire then put the tire patch on top. the compound solution melts the rubber together to seal the hole shut. determining things through process of elimination is pretty simple, if the engine isn't running smoothly it could be as simple as bad spark plugs to the monolithic sub-straight in a converter will fall apart, but you wouldn't know without process of elimination.

13.

Good Afternoon Linda,

I am in full support of the proposed credit equivalencies in Science for Automotive Technology 1 & 2 as well as Biotechnology.

Thank you for your work to support student success!

Donneta Oremus
Director, Career & Technical Education
Marysville School District

14.

I'm emailing to support the application of a science credit to the Automotive Technology class at Bellevue High School. I am a student in the class and I can attest that science is an important part of what we do. Cars are complex machines and we explore different parts of science such as pressure, heat, electricity, and chemistry to work on cars. For example, during our electricity unit we explored how a battery worked at a molecular level and different charge rates at different voltages, which I was simultaneously learning about in our AP Chemistry class. We also use tools such as Digital Volt-Ohm Meters, which helps us analyze the flow of electricity, and Pico Scopes, which graphs more complex data such as the compression of an engine over time or the voltage signals over the car's CAN-BUS line. These tools are used in the scientific and engineering fields. This class also provides an opportunity to not just learn science from a textbook but to see it at work in a useful field.

15.

The reasons auto tech should be getting science credits is that working on cars is also science. For instincts a Technician use to calculate engine airflow based on changes in manifold absolute pressure and other variables and how an engine runs uses four-stroke combustion cycle it begins the cycle by bring air and gas into the engine and makes a spark to fire up. Last but definitely not the last is the fact your using gasoline to convert into energy which is push gears to get you're cars going. and this is a couple of many reasons why auto tech revive both ct and science credit because everybody need science credits to graduate.

16.

Hello, thanks for asking for comment. I believe all 3 of these would really help CTE and students . The flexibility for students is a paramount importance, and the ability for staff to meet the challenge.

I am in full support of these 3 being Science Equivalent.

[Automotive Technology 1-Science](#)

[Automotive Technology 2-Science](#)

[Biotechnology-Science](#)

Brad Hooper
Director, Career and Technical Education
North Thurston Public Schools

17.

Reasons why Auto Class should receive science credit: On a daily basis we learn about things that are scientific. For example, speed density, barometric pressures, batteries and how exactly they produce electricity and current, Pascals law, hemispherical combustion chambers, carbon dioxide, oxides of nitrogen and many other scientific things that come up in everyday auto motive repair.

I would benefit from having a science credit from auto because it would be beneficial to have on resumes and transcripts, and help all all of us get into better schools, get better jobs and achieve greater things in this world.

18.

i think that auto class should count as science credits because one this class will benefit me more in the real world than any science class ever will, two i enjoy this class because i get to work with my hands and get to be interactive with what the teacher is talking about and get to learn real life skill.

i'd benefit from science credit in auto class because science is used all the time during auto class or cars in general and also i like this class and i enjoy working in this class i try in this class. science class not so much.

19.

Auto class should be a science credit because you learn a lot about cars and can help you later on in life. Auto can also help you with your science credits either if you have failed or need any credits, auto teaches you science in a auto shop by doing real life experiments.

20.

I am with the Meadowdale Automotive Club. I am currently a sophomore at Meadowdale high school. I am writing today share my views on why we should earn a science credit along with the CTE credit for the Automotive Program. The first reason that i would like to bring up is the science that goes into the machines and vehicles that we are operating on daily. We learn how the chemicals within the engine and compartments react with each other in order to get the reactions needed to move and operate the vehicle. Another reason that we should earn science credit is that we are learning more than just the maintenance required to fix the vehicles, we are learning about all the science that happens within the engine itself. All of this Happens with in a slit second. thank you for your time, and I hope that you will consider greatly.

21.

i believe that auto should be science credit because we learn about velocity and speed. we also learn about how gasses go through a car catalytic converter and messes with our environment. and how just a simple tune up can keep are cars running great and not make a lot of emissions. Also i'm already getting science credit for this auto program.

22.

Hello, I believe that Auto shops credits should counts as Science credits. We learn lot of things in auto shops like Batteries, replace the oil, toxic stuffs in the cars, lot of thing that are related to science. It would beneficial the science credits to Auto shops.

23.

Automotive technology should be a science credit because we learn about this class is a practical application of science. Another reason is we learn that in a perfect scenario an engine's air to fuel ratio 14.7:1 at sea level. We also learn why hydrocarbons are bad and how we can fix a car that puts out too many hydrocarbons. if automotive technology counted for science it would help me because i am proficient in CTE credits but i am deficient in science credits.

24.

Good morning Linda – I am in support of the equivalency credit in Auto Tech I for science. If you have any questions, I would welcome a conversation. Thanks, Kris

Kris Blum

Executive Director, New Market Skills Center

25.

auto tech should count as a science credit because in this class they teach you many things that connect with science and it can really help you later on and it will also help you with your science credits that you may have failed. it will be a lot easier and better to take auto tech than taking a normal science class.

26.

Thanks for fighting for the right to have science credits in our auto shop class. I've learned more about things like motion, electricity, and properties of motion that are needed for diagnosing vehicles. It has been more helpful than Bill Nye the Science Guy.

27.

One reason why Auto should be a science credit is simply the operation of a combustion engine. Combustion of a fuel creates high temp. and pressure gases, which expand. The gases are used to move a piston, or the engine itself, doing useful work. Internal combustion engines can be powered by any fuel that can be combined with an oxidizer in the chamber. This is part of what we learn in Automotive class.

Another reason to count it as science credit is learning to use "vulcanize" to liquefy rubber to patch tires by combing the rubbers together.

It's important to me because i have lots of CTE credits and i would like Science credits to count instead as it looks better on college transcripts.

28.

Automotive class teaches many science concepts. We learn the properties of dozens of different chemicals, how air and fuel mix and combustion. We learn about the forces applied to mechanical parts by either mechanical or hydraulic systems. We also learn about the transfer of energy in many different engine systems. Auto class should be worth a science credit because it teaches us science in a practical, hands on way

29.

I am in the Automotive Technology Class at Meadowdale High school in Lynnwood Washington. I believe we should have science credit for the auto technology class because we talk about the different chemicals used in fluids like brake fluid, engine oil, and anti-freeze. We also talk about the chemical construction of brake pads and brake rotors. As well the difference between aluminum engine blocks and cast iron engine blocks and how each dissipates heat. thank you for your time and consideration.

30.

Two reasons we should get science credit for an automotive class. One is patching a tire because the glue that is used makes the rubber tire patch forms to the tire, the other reason we should get science credit is when you pull out the oil drain plug and a oil and coolant mixture comes out because of a bad head gasket. that's why i think we should get science credit for an automotive class.

31.

I am a student at the Bellevue highschool autoshop and I can remember countless times when Mr.Mccue would talk about science. From talking about different forms of energy to chemical reactions, the amount of science subjects we over is quite extensive. We go over things I have learned from other sciences classes, the classes are almost one in the same. Thank you for reading my email.

32.

A couple reasons why auto tech should be a science credit are when are thought proper safety procedures just like any other science class we are also thought when and were certain attitudes are required. and finally we have similar steps going thru one of are experiments.i have tons of cte credit and science credit looks better on a college application.

33.

I am a Junior at Mountlake Terrace High School. I am currently enrolled in the Inter District Program and I travel daily to Meadowdale High School to take the Auto Class. I am writing today to voice my opinion as to why the Auto Class should count for science credits for those enrolled. My first reason as to why I believe this is, in this class, we learn so much more than simple maintenance. In tandem with maintenance, we learn the science behind how vehicles operate. We learn and understand the mechanics and the methods as to why and how the vehicle operates. From the simple crank of a key, to the ignition coils, to the starter, to the alternator, to the battery, to the rush of oil to lubricate all parts of the engine, to the spark plugs creating explosions in the combustion chamber, to the start of the vehicle. All these take place in under a second. Speaking of secondly, my second reason as to why I believe this class should award science credits is, most everyone in this class are pursuing a career in the automotive industry. The automotive industry is facing a severe shortage of technicians in the field. I

know this first hand, as I am a technician myself at Acura of Lynnwood. We are facing a shortage of workers at my job as well. The students who are choosing this as a class, and eventually as a career choice are making a sacrifice of two periods. I believe that the greater good that they will contribute to society is worth awarding science credits. Please consider the points I have put forth in this email. I wish you the best.

34.

I think that the automotive technology class is legible for the science credit because cars require science knowledge to work and make, especially on the electrical unit. We learn how to use DVOMs, which would be useful in engineering and physics, Ohm's law, build circuits, and much more. It isn't easy and requires a lot of logical thinking and math. Then, in the engine performance unit, we use graphs to measure compression ratios, firing order, and a lot more. We soon diagnose the engine to see what we can fix. I truly believe that the auto shop deserves the science credit.

35.

we should have science credit because its a good class also it would help a lot of people who are failing have a good grade in science. And if people don't like science they could come here to auto class and learn about an module an electronic unit.

36.

Just wanted to let you know that I fully support offering Science Credit for student who take Automotive Technology. I frequently observe students using the scientific method in these courses and believe that with proper training and support students in these courses can use science to:

- 1) Ask questions and use the scientific method to answer them.
- 2) Conduct experiments in an effort to effectively diagnose problems.
- 3) Connect Automotive technology to real-world science and learning about our world.
- 4) Connect their learning to other scientific disciplines

I appreciate your time and consideration of this change.

Best regards,

Michael Schiehser, Assistant Principal
Bellevue High School

37.

My student, Chris Bullard, has taken five credits of auto-tech. Freshman year, he took beginning auto and advanced auto; sophomore year he took the 3 hour advanced course, and this year he was a teacher's assistant. Next year he is enrolled for the 3-hour advanced course. These are a few things he has said about the program:

The auto-tech program should be a science credit. During my 3 years, I have learned how the mechanics and electrical parts of the car influence each other to allow the car to run effectively. We analyze wiring diagrams which track how parts interact, learn how electrical impulses affect one another, and develop understanding in combustion and gas laws. In our science and math classes at school, and even in our lab-based science classes, I struggle to learn in traditional classrooms, but in Auto Tech, I am able to be hands-on and use science and math for practical settings which better connect to my learning style. In traditional science courses, we learn through lectures, reading, and small projects, but for me, it is hard

to sit down for the whole period. In the 3-hour course program, I am able to attain my attention during the 1-hour lecture and 2-hour hands-on shop experiences. Without auto-tech as a science course, I would be unable to progress through high school as successfully as I have. The auto-tech course here has truthfully impacted my life and career aspirations for beyond.

Sincerely,
Nicole Rixen
School Social Worker

38.

I have taken five credits of auto-tech. Freshman year, I took beginning auto and advanced auto; sophomore year I took the 3 hour advanced course, and this year I was a teacher's assistant. Next year I am enrolled for the 3-hour advanced course.

The auto-tech program should be a science credit. During my 3 years, I have learned how the mechanics and electrical parts of the car work with each other to allow the car to run. We analyze wiring diagrams which tract how parts work together, learn how electrical impulses affect one another, and understand combustion and gas laws. In our science and math classes at school, and even in our lab-based science classes, I struggle to learn in traditional classrooms, but in Auto Tech, I am able to be hands-on and use science and math which better connect to my learning style. In traditional science courses, we learn through lectures, reading, and small projects, but for me, it is hard to sit down for the whole period. In the 3-hour class, I am able to pay attention during the 1-hour lecture and 2-hour hands-on shop experiences. Without auto-tech as a science course, I would not be as successful . Auto tech is what I want to do as a career and having it as a science credit will help make me more able to do that.

39.

hi i am a student in Pete Mccue's 3 hour automotive class. we spend an hour in the classroom going over different topics related to the unit of the semester. This year the units we are focusing on are brakes and electrical. I take a Physics class as well and a lot of the topics covered in auto are covered in physics. We talk about friction and the different motions/forces that effect the power of the car and I have gone over the same stuff in physics. We also talk about the different chemicals that are used in cars and how specific chemicals react with others. We talk a lot about new hydrogen cell cars where the car will in the end produces h2o instead of carbon monoxide. i really think that adding this science credit could help people who do not thrive in a typical science class. Auto adds a real life connection to science.

40.

Thank you for adding my input to information being presented this week to State Board of Education (SBE).

[Automotive Technology 1—Science](#)

[Automotive Technology 2—Science](#)

[Biotechnology—Science](#)

These three courses meet or surpass CTE-science course equivalencies are courses in which a student is taught both CTE and science knowledge and skills. The student meets graduation requirements in both subject areas.

These courses will help students meet both education and career goals and they sufficiently cover both science and CTE quite well. From automotive course to chemistry courses, each course reaches learners at different levels and assists students by finding applications to the course work or vice versa serving more of our student population.

Thank you,
Jeannine Sieler
AP and General Chemistry
Bellevue High School
University of Washington
Institute for Systems Biology

41.

I received an email about the possibility of making automotive technology a science credit. I am asking you to approve that without a doubt. Auto tech has so much science involved in it that colleges from trade schools to four year universities give a science degree in it. My students learn about fluid displacements and pressures, how electricity flows, mathematical equations, geometric pressure, volumetric efficiency, kinetic energy and so much more. This is no longer the field that people went into because there was nothing left to do. It is no longer the something that can just be done in a back yard. It is a field that requires a higher level of thinking as well as a higher level of soft skills.

The bonus to all of this is that doing it for the students, it helps them graduate because they love the class so they are more invested in it. That investment makes their learning seem easier to them. As for on paper it is better. There will be higher graduation rates getting their science credit here because they actually want to learn this. Giving this a science credit is a win win for all involved be it student, teacher, or administration.

Issac Juma
Automotive Instructor
Mt Tahoma High School