STEAM Basic Rubric Formula:

Course:

½ on participation – including productivity, attitude, attempt, working to ability, support of others

½ of production – meeting guidelines, progressing in steps, portfolio and project goal meeting

Individual Production Rubric Guidelines:

Excellent – A+

• Professional and/or exceptional beyond peer level of quality,
• all guidelines followed and within specs and has structural/integral integrity
• attention specifically paid to the aesthetic quality of construction/ performance
• a comprehensible, even eloquent, linguistic component that flows with the pictorial/design/execution components.

Very Good – A

• at least good general quality,
• all guidelines attempted to be followed even if some results fell a little outside of certain constraints and mostly within the specs, with basic structural/integral/ performance integrity
• a generally acceptable aesthetic quality of construction
• a comprehensible linguistic component that flows with the pictorial/design/ execution components

Good – B

• at least good general quality,
• all guidelines attempted to be followed even if some results fell generally outside of certain constraints but still needs to overall be generally within the specs, with basic structural/integral integrity
• a generally acceptable aesthetic quality of construction/ performance
• a comprehensible linguistic component that mostly flows with the pictorial/design/ execution components

Average – C

• at least good general quality,
• all guidelines attempted to be followed even if some results fell generally outside of certain constraints – a select few can fall well outside the constraints, but none of the main/critical elements can fall outside the constraints, overall be generally within the primary specs,
• basic structural/integral/ performance integrity, one fatal flaw is acceptable, the student needs to understand when, where and why the flaw happened and how it can be accounted for and corrected,
• a generally acceptable aesthetic quality of construction/ performance is not necessary, excelling in this area can help the grade based on the structure, however ‘making something attractive’ does not make for a passing grade if the product is not representative in function of the assignment
• a roughly comprehensible linguistic component that should basically flow with the pictorial/design/execution components
Below Average – D

- not quite good general quality, most guidelines attempted to be followed with a few results fell generally outside of the constraints
- not overall generally within the primary specs,
- does not have basic structural/integral/performance integrity, although at least one primary component of the assignment needs to be met – the student needs to at least understand when, where and why one other primary flaw happened and how it can be accounted for and corrected, (expect one new mental concept from each lesson – don’t expect students to learn more than one new major concept at a time, if a student grasps one new concept, they should pass an assignment – they’ve learned something, you’ve helped them reach the next level of intellectual growth, no one should receive a failing grade if that happens during a lesson)
- the aesthetic quality of construction is not impressive, excelling in this area can help the grade based on the structure, however ‘making something attractive’ does not make for a passing grade if the product is not representative in function of the assignment
- a roughly comprehensible linguistic component, at least an outline that should basically follow with some pictorial/design/execution components

Deficient – F

- an inability to meet any of the primary requirements of the lesson,
- an inability to learn the basic functions and procedures of the lesson,
- an inability to correct ones mistakes and learn from them – this does not mean that any certain skill has to be mastered, some people just can’t do certain things, it does mean that the student was unable to learn about significant components in the lesson that would enable them to be more successful at a similar project in the future,
- a chosen emotional reason for a lack of aptitude, desire or willingness to complete the assignment despite having the intellectual and physical capabilities of doing so. In the latter circumstance, - the educator needs to document that they discussed the lack of desire to participate with the student and offered another solution to completing the assignment. Student’s emotional needs have to be accounted for, some students are crippled by certain circumstances, other people, etc.
The area of STEAM most recently being refined is assessment. The primary assessment tactic used with STEAM is a backwards design (Wiggins & McTighe, 2005) team-based portfolio project of creating generic titles for each type of strength distributed for the skills needed for each type of team project. One way it was thought to be used within this structure, was having one or two students be assigned to be the lead or co-captains of one or multiple job titles. The grading is broken down to the same general portfolio building and rubric structure. All the elements of the project and how they are evaluated are explained in advance with the instructions for fulfilling the requirements for the portfolio due at the end of the project. Students can see the checkpoints and get feedback, credit and encouragement for their work throughout the process. Various assessment techniques can be embedded in the portfolios, such as personal observations, interviews, check-lists, attitude scales, questionnaires written tests and more. Each title area of the project is given an equivalent point value, for instance, to use STEAM, each of the divisions receives 20/100 points, with partial points being also awarded. Grading is done continually through the process, but when it the project is completed and the grades are finalized, all students on the team receive a grade consisting of the total of team points acquired for each division averaged with the grades from the topic(s) they were the leader on. To illustrate this, let’s say that at the end of the project grades are assigned as the ‘S’ component getting 18 points, the ‘T’ getting 17, the ‘E’ getting 15, the ‘A’ getting 16 and the ‘M’ getting 12. All of the students will have 78 for their group grade, which will get averaged with the equivalent of the grade that each student was in charge of directing, recording and reporting for the project, if a student was assigned to lead or co-captain two or more areas, those grades are averaged before the individual grade is averaged with the team average for a final grade. So, a student leading ‘S’ would get 18/20 = 90% averaged with 78% equals 84% for a final grade, where as a student leading ‘T’ and ‘E’ would get 32/40 = 80% averaged with 78% equals 79% for a final grade. Hopefully, all of our students do better than these examples. This way each student is held accountable for the whole team’s efforts and results as well as their own specific grade for how they did with the area of the project that they possessed specific skills for and the averaged final project grade reflects both equally. Students adapt very quickly to helping each other succeed and doing all they can as individuals to take charge of encouraging, helping and guiding their team as leaders and participants. Since no one student is in charge, no one maintains the power in the group. Students who get particularly interested in a specific part of the project are encouraged to build up that area of the team’s portfolio and explore related topics. It is also very helpful since students tend to befriend others with similar skills socially, it affords students an opportunity in an academic setting to not only see the value of others with different types of skills, but to obtain in-depth knowledge as to how other types of people think, react and process information. This leads to a type of working and
societal community knowledge that cannot be taught without experience. Students who are excellent at rote memorization and regularly receive excellent grades on memory based tests are often given more affirmation of their accomplishments than those who do not excel at memorization. With this structure, those students who are excellent at understanding processes and creating new things can be recognized as skilled designers, technicians and engineers. Even students with significant limitations are offered ways to not only participate, but to teach others on the team. Often teams who have students who would not be great friends outside of the classroom come to appreciate the skills and perspectives of the rest of their teammates who are usually different from them. It has been very exciting to see students who have not understood each other’s perspectives previously suddenly encourage and thank each other for contributing their skills to the project. STEAM teams evolve into communities and connections are made that extend far beyond the classroom.