

Informative 02

São Paulo, 02nd June, 2022.

Deliverables

Dear Participants,

The Design Evaluations will be broken down in different events, this informative refers only to Deliverables.

All deliveries must be written in English. Any document delivered partially or totally in a language other than English will have a 30% deduction from their score.

Design Validation

The Design Evaluation will have partial deliveries throughout the year. All the reports we ask should already be part of the team activities and should not add to the team workload.

All details regarding templates, subjects to be covered, scores, penalties, submission and further clarification are described within this document.

The goal is to have a closer look on the team's work and evolution throughout the year, encouraging continuous learning and improvement as well as to identify coherence between targets/goals and achieved results.

Scores and Penalties

This part of Design Evaluations has a score of 100 points.

Delays in file submission will not be accepted; the teams are strongly advised to submit all documents hours before the deadline. Any document submitted by any team which does not meet the deadline will be disregarded and will be assigned a score of zero (0).

Deliverables

This section is meant to describe all deliverables, what is expected for each of them, how many points each is worth, and how each may be penalized.

Each deliverable has a specific date and time for submission; Delays will not be accepted.

- **Deliverable 1 – due date: Jun 30th, 2022**

- Targets and Goals for 2022 Northeast competition (15 pts):
 - Each team needs to submit the following list of vehicle targets and goals:
 - Time for 0-30m of acceleration (s);
 - 100 m Final Speed from rest (Km/h);
 - Traction Capacity (N);
 - Turn Radius (mm);
 - Braking Distance (mm);
 - Width (mm);
 - Wheelbase (mm);
 - Total Weight (Kg);
 - Ground clearance without driver (mm);
 - Prototype allocated budget (R\$);
 - Each team will start with 15 points and will lose 1.5 points for each undelivered item.
 - If there are targets/goals changes through the project, the teams are allowed to submit a new file to replace an old one, penalty will be 0.5 point + 0.1 point per month to be deducted from **Deliverable 3**.
- Project Management Plan (15 pts):
 - Each team is required to deliver the timing plan for its vehicle. This timing plan should be built in a way that the team understands and presents all important events and milestones for the vehicle design and manufacture, tasks already completed should also be on the timing plan and compared to the initial plan; The timing plan must be delivered as an attachment, in PDF format;
 - 5 pages maximum.
- **Deliverable 2 – due date: Aug 26th, 2022**
- Validation Report (30 pts):
 - Each team is required to report 2 validation studies;
 - The first study must evaluate and describe the design, manufacturing and validation of the roll cage structure. A special attention must be dedicated to hard points and attachment points (tabs, brackets and fasteners) to the suspension systems and it shall be added to the report.
 - The second study needs to evaluate the hard points and kinematics of a 4x4 suspension (for future projects), delivering toe analysis and ackerman simulations. Your team must consider CV joints (angular and axial freedom) impact on the suspension and steering design.
 - All studies should contain input information, assumptions considered, output data and any other information considered important to understand the results;
 - When applicable, present: Boundary conditions, mesh, solver, post processing, fatigue, tests used as input, off-the-shelf components selection, etc.

- The final report, including all validation studies, must have up to 3 pages in length (maximum size).
- Design Freeze (10 pts);
 - Each team is required to send CAD screenshots of final vehicle design; they should provide vehicle images for: front, rear, left, front diagonal and rear diagonal views as well as close looks to each of the sub-systems: roll cage, steering, suspension, brakes, powertrain and electronics. Penalties will be applied if there are missing components, interferences or any other condition that indicates the project is not finished.
- Validation Plan (5 pts)
 - Each team is required to submit the validation plan briefly describing which activities will be performed to ensure the vehicle has achieved its performance and durability targets.
- **Deliverable 3 – Due date: Oct 03rd, 2022**
 - Technical Specification Sheet (TSS)
 - Same sheet as sent on previous years, the template will be informed in the next section;
 - Test Results and Reports (25 pts);
 - On this section teams are requested to provide all test results to verify if they have achieved the target established on **Deliverable 1**, the numbers will be verified, and the penalties will be applied as below:
 - 0% to 5% deviation: no penalties;
 - 5% to 10% deviation: for every 1% above 5% mark the team will lose 4% points from its score, the teams are allowed to justify the reason for the target not to be achieved, if accepted 2% will be lost instead;
 - Deviation above 10%: The team will lose 5% for every 1% above 5% deviation. No justification will be accepted;
 - Show testing targets evidence, otherwise the results will not be considered;
 - One of the tests must have video evidence submitted (maximum 20 MB file);
 - For each undelivered test report 5 points will be deducted as penalty;
 - The deductions will be applied for each item, no negative points will be awarded.
- **Competition Verification**
 - All deliverables from 1 to 3 will be submitted by the teams in advance, these deliverables should guide the teams in the design process throughout the year, these deliverables will provide 0 to

100 points maximum for each team, which is a partial score to be checked during the competition;

- During competition some items from Test Results will be measured by the judging committee, each objective will be measured and compared to what the team claims to have achieved on **Deliverable 3** and the deviation error between the event and team's measurement will be applied as follows:
 - 0% to 5% deviation: no penalties;
 - 5% to 10% deviation: for every 1% above 5% mark the team will lose 2% points from each item score;
 - Over 10% deviation: for every 1% above 5% mark the team will lose 5% points from each item score;
 - For tests not performed by the team, the committee will cross check the results to targets and goals submitted on **Deliverable 1**;
 - If the team has not performed the test and does not have a target/goal for the item, a 50% punishment will be applied.

Template

A specific informative will be released for deliverables template, which should work as format guide, however slight changes are acceptable.

For every submission the team should submit a PDF of the complete deliverables template, even if the next deliverables remain blank; for deliverables 2 and 3 the previous pages already sent should be resent unchanged, in the event of targets update a new submission date should be informed and penalties will be applied as described on **Deliverable 1** section. If the team changes the previous deliverables content without informing the changes, the Design Validation score will be 0.

The templates to be used is the **Technical Specification Sheet**, which can be accessed through the link below:

- Technical Specification Sheet:
<https://drive.google.com/file/d/12TB0d-RK7M8vyfhctZQn7UgHIZUwXhup/view?usp=sharing>
- No change is allowed.

Dates and times for files delivery

The design evaluations files should be delivered following the dates below:

Design Validation (Delays will NOT be accepted):

- Deliverable 1 – Jun 30th, 2022 up to 13h59min (Brasilia time);
- Deliverable 2 – Ago 26th, 2022 up to 13h59min (Brasilia time);
- Deliverable 3 – Oct 03rd, 2022 up to 13h59min (Brasilia time);;

Submission procedure

Due to documents sizing, there will be two different submission procedures.

Design Validation

Deliverables submission will be made through email (bajasaene@gmail.com). The deliverables should be submitted by the teams as a single document in PDF format (except for **Deliverable 3** in which the team will also submit the TSS), following the standard title below:

BNE22 – Deliverable X – Car ## – Team YYYYYY

The teams are allowed to update the files by making a new upload until the deadline, only the latest submission will be considered as official and the appropriate penalties will be applied.

Presentation File

The presentation file must be uploaded to Google Drive (no other way will be accepted) and the generated links should be sent to the committee through the email: bajasaene@gmail.com meeting the deadlines to be released on a further informative specific for the design presentation event. The email should have the following standard title:

BNE22 – Presentation Files – Car ## – Team YYYYYY

Baja SAE Brazil – Northeast Event Committee