

# Project Base Learning Guide list



For Star Ship Design

SCIFI Scyntis

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**Grades:** 11th & 12th.

**Objective:** STEAM design applications and art. Students are encouraged to use their creativity, artistic abilities and their imagination creating starship while familiarizing themselves with the real challenges of deep space and addressing the issues to the best of their abilities.

With the assistance of various tools found at [www.corenovus.org](http://www.corenovus.org), and an instructor, students perform a project based learning exercise creating a model space craft. Individual students or (groups of no more than three) are introduced to the basics of design, astronomy, basic space flight mechanics, engineering and potentially everything that interstellar space travel entails. (See list below).

Art & Design  
Astrobiology  
Astronomy  
Biology  
Chemistry  
Computers  
Creativity  
Drafting (CAD)  
Drones  
Electronics

Engineering  
Geology  
IEEE format Writing/Reading  
Math & geometry  
Measurements & formulas  
Mechanics  
Medicine  
Metric conversion  
Physics  
Probes

Radiation  
Robotics  
Statistics  
Technology  
Xenobiology  
And more

## Grading Check list

**Instructions:** Remember the definition of science fiction throughout the project. It is a genre of speculative fiction, typically dealing with imaginative concepts such as futuristic science and technology, space travel, time travel, faster than light travel, and parallel universes. In other words, let your imagination run wild. The vehicle that you are designing can be whatever you want it to be. Let the real necessities, dangers, and immense distances of space guide you in your design.

Model Construction -	Description details	Check list	points
(Exploratory Engineering) defined as the process of designing and analyzing hypothetical models of systems that are not feasible with current technologies or methods, but do seem to be clearly within the bounds of what science considers to be possible.....So, learn and have fun!	Aesthetics (Artistic appreciation)		10
	Starship Construction/launching explained		2
	Demonstration scaled to model accuracy with commonly known object		2
	Exterior and Interior views coincide (Coherent floor plans, blueprints & schematics)		5
	Estimated costs of Starship cost/budget compared to submarines or cruise ship, etc.)		3
	Mission Objective stated (Intro to IEEE format)		5
	Model itself ---cost, stories of constructing (flimsy, weak, stable, strong, solid) build		1 thru 5
		Total	

Mission Feasibility	Familiarization of basic astronomy, gravity, distance and speed, Astrometrics (Navigation) concepts		5
	Present basic formulas/calculations of distance/speed needed (How long and how fast to go from point A to B)		3
	Orbital/moon base principles & terminology (construction)		2
	Identify possible hazards and safeguards of Mission		3
	Destination stats & expectations in the journey		2
		Total	

"Unobtainium" Usage	Use of any fictional, extremely rare, costly, or impossible material, or device needed to fulfill a given design for a given application, engineering, and thought experiment(s).	Allowed only 2 times	(With explanation of where & how substance/material came to be and what it does/ Extractive metallurgy techniques, etc. 1 or 2
	Total		

Life Support & Crew	Description Details	Check list	Points
	Crew compliment & Titles (who is needed, why?)		3
	Food,Water,Air,Heat/Cooling systems explained		3
	Interior ship hazards identified & protections		3
	Familiarization of Micro-gravity (effects to body)		3
	Cryogenics/Work/Play (life on board examples)		2
	Emergency/redundancy systems (Medical)		2
	Training examples, time frames, criteria, etc.		2
Total			

Ship Mechanics /Other	Propulsion/Engine systems		2
	Sensor array, exploratory equipment		3
	Robotics, probes, drones & Computers		2
	Armaments/ smaller craft, hangers special tools		2
	Micro- Meteor/debris protection/deflectors		3
	Computer/Communication systems		3
Total			

	Comments	Grade
Sci Fi Scyntis Star Ship Design Over all Proof of Concept Grade		

Instructors should look for and encourage:

- Logical information research & flow
- Complete and rational ship systems
- Visual Impact of Ship Models (Aesthetics)
- Numerical information & visual aids (Graphs & Charts)
- Methodology and purpose of Mission Objectives
- Creative ideas concerning issues with gravity, propulsion, radiation protection, orbital construction and tools to help performance of crew.

At the end of the project students should turn in:

Model and diagrams, schematics and/or blueprints of a starship vessel

(Ideally model is no more than 25 lbs. and can be held by one person)

IEEE format paper (Scientific Article) stating Mission Objective for vessel & crew

Group/Individuals names

Introduction Name of Vessel

Descriptions, including calculations, formulas

Include all references

Analysis & formulations of journey

Conclusions

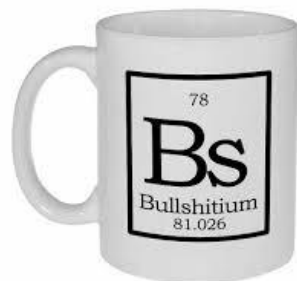
References

Any other relevant materials

Instructor's Notes: "Unobtainiums" - List of sci fi elements /Materials with atomic number, element symbol, etc. Excellent opportunity to go into the entire Periodical table!



Real



Not so real....but consistent with periodical table

## Completed on time

6 week project (Develop tools, find unique references, websites & apps).

6 month project (Depending on depth of subjects, guest speakers, film and video, etc.).

Note\* Present to instructor the progress report after 3<sup>rd</sup> & 5<sup>th</sup> week/month for feedback.

## Group Participation

Communicate effectively with group members.

Presented to Instructor the progress mid report.