Space Ships

Arguably the lifeblood of a space based campaign, a party's ship is often their character's homes, livelihood and entry to adventure. The purpose of this system is not to realistically simulate space flight and combat, but rather to provide a Hard Sci-Fi gaming experience using real world physics as a basis for abstract tabletop rules. As such, a fair amount of hand waving is done, favoring ease of play over unnecessary granularity.

A DM can either provide a prebuilt ship to the party, or allow a party the chance to build their own vessel.

Step 1: Determine Ship Quality
Step 2: Choose Hull size
Step 3: Choose Manufacturer
Step 4: Determine Hull Rating
Step 5: Distribute HP
Step 6: Choose Subsystems
Step 7: Assigning Crew
Step 8: Paying for it all

Step 1: Determine Ship Quality

First, determine the quality of the ship you are designing. There are five available qualities for ships:

Antiquated: This is an outmoded or outdated ship that either originates from an older era, or are built now to extremely low standards of technology or quality. For every point of Hull allocated, a ship of this quality provides a single system point for distribution.

Refit: This vessel was rebuilt, either from salvage or as an upgrade to an older model. A vessel of this quality might be poorly maintained or improperly fitted, and might even be a composite of multiple vessels. For every point of hull allocated, a ship of this quality provides two system points to distribute.

Civilian: Manufactured to civilian standards, these vessels make up the bulk of most ships in use currently. Seeing use by free traders, explorers, colonists, and even light military duty in system defense forces, vessels of this quality are common sights in every port. For every point of hull allocated, a ship of this quality provides three system points to distribute.

Military: Manufactured to higher standards than civilian ships, military ships use the latest technologies and manufacturing processes, and can rack up truly impressive manufacturing costs. Access to military hulls is restricted to system defense forces, and the possession of such a ship by civilians without proper licensing is sure to bring the attention of the powers that be. For every point of hull allocated, a ship of this quality provides four system points to distribute.

Prototype: These ships are built at unimaginable expense either as early skunkworks prototypes of new ship classes and configurations, or as elite Special Forces vessels for the wealthiest of governments. Possession of a vessel of this quality is sure to bring special attention in every port, and since most are one of a kind, a certain notoriety wherever it goes. Good luck trying to pry one of these from the hands of whatever group controls it.   For every point of hull allocated, a ship of this quality provides five system points to distribute.

Step 2: Choose Hull Size

A ship's hull size will eventually determine what abilities and statistics a ship will eventually have. Generally speaking, larger ships are just better than smaller ones in terms of capability. The bigger a vessel is, the more engines it can carry, the more weapons it can fire, and the more cargo it can move. About the only advantage to smaller hulls are their price. Every gram counts, and the bigger and more capable a ship is, the more it costs to build and maintain.

There are seven available choices for hull size

Size (Class)	Maximum Hull Rating	Cost per System Point	Crew Min/Max
Fine (1)	8	7,500	2 / 5
Tiny (2)	12	13,000	5 / 20
Small (3)	16	35,000	16 / 48
Medium (4)	20	80,000	50 / 150
Large (5)	30	200,000	150 / 400
Huge (6)	40	300,000	300 / 1000
Gargantuan (7)	50	400,000	600/1500

Fine (Class 1): Ships of this class are often in-systemers, dependent fighter craft, passenger shuttles and light couriers. Example ship types: *Pinnace, Fighter, Shuttle, Scout*

Tiny (Class 2): This class of ship is quite common and countless examples move to and from points of interest across every system in known space. Often equipped with a hyper-drive, these vessels ply the spacelanes between nearby systems, making routine transfers of manpower and materials. Example ship types: *Patrol Boat, Launch, Frigate, Courier.*

Small (Class 3): These ships are the most common in fringe areas, carrying out the necessary trade to keep the frontier profitable. With the ability to fit powerful engines and a robust jump drive, ships of this class are common sights coming to and from outlying star systems. Large enough for entire families to live aboard, traders of this class rarely stay one place for long. Example ship types: *Light Freighter, Destroyer, Transport.*

Medium (Class 4): Making up the bulk of system patrol forces, military vessels of this class are commonly seen alone or in pairs moving between contested systems or dangerous areas of space. Merchants of this class tend to stick to known routes to the fringe, or move in convoys. With high durability, ships of this class can be long range survey vessels and might be encountered in the farthest reaches of the fringe. Example ship types: *Cruiser, Medium Freighter, Surveyor.*

Large (Class 5): With stout weapons, thick defenses, and room for numerous marines, warships of this class can deny control of space to anything smaller, holding strategic points or taking control of stations and worlds. Merchants of this class supply stations, and carry the wealth of worlds, along with an entire community. Transports of this class can lay the groundwork for a colony singlehandedly, or carry an entire mobile garrison. Example ship types: *Battlecruiser, Heavy Freighter, Colony Ship.*

Huge (Class 6): Ships of this class make up the backbone of a battlegroup, denying space to anything unable to meet them head on. Requiring regular fuelling, these vessels are usually found in heavily

settled core areas, protecting valuable assets, and remaining near vital supply lines. Merchants of this class are the heaviest of freighters, moving vast quantities of materials between major settled worlds. A colony ship of this class could settle multiple worlds, or singlehandedly build space stations. Example ship types include: *Battleship, Bulk Freighter, Mobile Construction Yard, Refinery Ship.*

Gargantuan (Class 7): True leviathans, these vessels are veritably mobile stations. Generally autonomous, they often possess potent refueling capability, manufacturing and processing facilities as well as repair bays for smaller classes of ships. Capable of not just carrying multiple lesser craft, but of building them as well as repairing and maintaining itself, these ships make up the core of a battle group, or serve as the command post of entire sectors of space. Merchants of this class are the largest of freighters, hauling back massive bulks of materials to strategic yards, or moving the masses needed for terraforming. Some ships of this class exist flying among the stars at low velocity, living cities wandering the stars. Example ship types include: *Dreadnaught, Carrier, Superfreighter, Worldship.*

Step 3: Choose Manufacturer

Each ship is produced by one of a number of manufacturers, designed not just to the specifications of their eventual owner, but in a certain style and with attributes reflecting the proprietary technologies of their mother companies. Below are several listed ship manufacturers and what to expect with ships from their yards.

Atomic Rockets (ATOM)

"At atomic rockets, we know that every gram counts, and in our designs, it shows."

Founded early in the race for the stars, Atomic Rockets (ATOM) is known for producing the most efficient and powerful nuclear drive systems. With a number of original patents on vital systems, they have defended their market by aggressively researching new advances in engine technology, remaining the industry leader in rocket ships for more than three centuries.

Systems Bonus: +2 Maximum Engines rating per size class.

Feature: Ships built by this manufacturer have more efficient thrusters, and may add Engine Expansion and Fuel Tank subsystems for only 3 points of capacity, not 4.

Farnsworth Interstellar (FWIN)

"Good news, everyone!"

As the colonies first came online, Farnsworth Interstellar (FWIN) was at the lead in data systems and management, eventually purchasing a defunct shipyard that produced outmoded courier rockets, and with some clever redesigns launched a class of ship that created the hypernet that all human colonies now rely on.

Systems Bonus: +2 Maximum Communications rating per size class.

Feature: Ships have a superior hypernet database onboard, allowing access to far greater swathes of information in realtime, offering advantage on checks to retrieve information a number of times per 24 hour period equal to the ship's COMM bonus, to a minimum of 1.

Galactech Corporation (GTEC)

"Better, Smaller, Faster."

Originally founded as a corporate colony in the centauri system, the Galactech Corporation (GTEC) is known for being on the cutting edge of miniaturization and automation. Producing the best automated drones, and largest draft cargo haulers, Galactech ships ply the tradelanes from one end of human space to the other.

Systems Bonus: +1 free System Points to distribute for every 10 base system points provided by hull.

Feature: This vessel has additional capacity for hull subsystems equal to its ship size class.

Kriegertech (KTEK)

"Thinking about it, so you don't have to."

Originally a producer of cybernetic prosthesis, Kriegertech leveraged their computer technology into Synthetic development, quickly accelerating to become the leading manufacturer of synthetic integrated starships. Continuing a legacy of the best artificial intelligence, with the hardware to back it up, no ships have more powerful computers than any ships in class.

Systems Bonus: +2 Maximum Computers rating per size class.

Feature: Autopilot requires only 2 ship capacity.

Sanchez Smith Astronautics (SSAN)

"A whole universe of possibilities."

A struggling space munitions supplier, Sanchez Smith Astronautics (SSAN) experienced a dramatic change in fortunes after first contact, quickly blossoming into the largest private military contractor, exploiting a number of original patents to keep an edge over the competition, especially with a panache for new tech demos that always captivates the imaginations of the public.

Systems Bonus: +2 Maximum Weapons rating per size class.

Feature: This vessel has additional capacity for weapons equal to its ship size class.

Tyson Astro-surveying (TAST)

"The sky is not the limit."

At the forefront of space exploration, Tyson Astro-Surveying (TAST) has made a name for itself producing the best dedicated survey ships on the market. With a dedicated corporate philosophy eschewing violence, it is notable that they still manufacture the sensor systems and scout ships used by a half dozen governments for fleet reconnaissance. It is likely that any charted system a ship enters was originally mapped by either a TAST vessel, or one of their sensor systems.

Systems Bonus: +2 Maximum Sensors rating per size class.

Feature: These ships possess an Astronomical Survey subsystem using no capacity, and may add its Sensor System rating bonus to all Astro-Surveying ability checks made with onboard equipment.

ART BY FRANK HONG
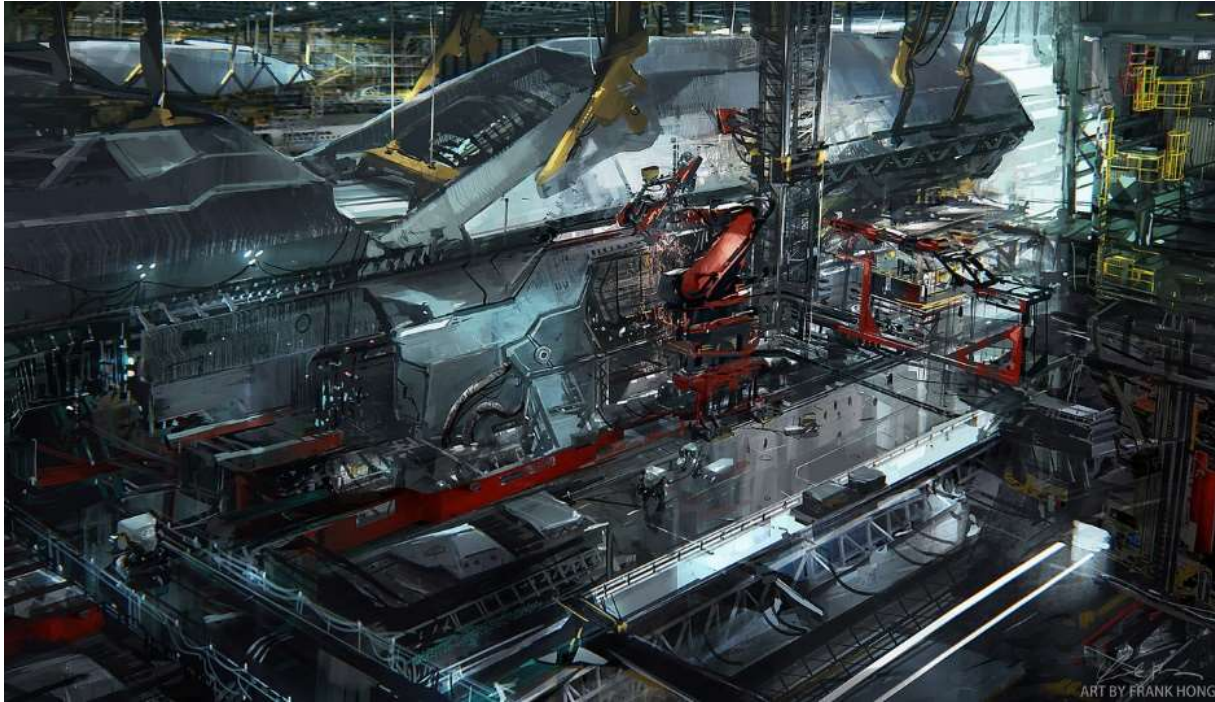
Step 4: Determine Hull Rating

A ship's hull rating determines its physical size, complexity, and number of compartments, limiting the size and capabilities of its systems, and how many subsystems it can fit. Additionally, most values calculated for a ship are based on its hull rating, such as price for building, costs for maintenance and so forth.

A ship's maximum hull rating is dependent on its size, and cannot exceed the listed amount.

Size (Class)	Maximum Hull Rating	Cost per System Point
Fine (1)	8	7,500
Tiny (2)	12	13,000
Small (3)	16	35,000
Medium (4)	20	80,000
Large (5)	30	200,000
Huge (6)	40	300,000
Gargantuan (7)	50	400,000

Step 5: Distribute System Points

A ship is allocated a number of System Points dependent on the quality of the ship and its hull rating. When building a ship, you receive the listed number of system points for each point of hull rating. A system may not have a rating higher than the hull rating of the ship(modified by manufacturer). It is not necessary to spend all available system points, as each one increases the final cost of a ship.

Quality(Rating)	System Points per Hull Rating
Antiquated	1
Refit	2
Civilian	3
Military	4
Prototype	5

Systems Rating	Systems Efficiency Bonus
1-4	-1
5-8	0
9-12	+1
13-16	+2
17-20	+3
21-25	+4
26-30	+5
31-45	+6
46+	+7

Each system point added is expanding the core systems of the ship in a department. The five departments are:

Weapons (WEAP): This system controls, aims arms and cools all weapon systems aboard a vessel. The higher your weapons rating, the more weapons systems a ship can fit, increasing her offensive payload.

Engines (ENGI): This attribute determines a ship's overall engine rating, determining maximum rates of acceleration, fuel capacity, and hyper drive charge times. A ship with no engine rating is incapable of movement on its own, and might be a deployable gun platform or static system defense node.

Computers (COMP): Virtually every system and device aboard a ship is regulated and operated by computer, just for its normal every day operation. This rating is for computational power above and beyond the minimum required to run a ship's general systems.

Sensors (SENS): Literally the ship's eyes and ears, and several other sensory organs that don't quite make for an easy metaphor, a ship's sensors determine how well, and what, a ship can detect. Of course, there are always basic telescopes and radar for general navigation, you're not going to see much with basic navigational equipment.

Communications (COMM): Communications equipment encompasses a wide variety of transmitting and receiving equipment. Comm lasers, radios, x-ray interpreters, translation equipment, and even electronic warfare capabilities all come from these systems.

System HP

Each system on a ship has an amount of HP. Each system's HP is determined by multiplying the ship's size, system rating and quality. For example, a Medium Military ship with a weapons rating of 12 would have 144 hp in its weapon system (12*3*4).

Optional Rule: Universal HP
Instead of using System HP, use a single pool of HP for a spaceship. To calculate this amount, multiply a ship's total system points by it's quality and size. For example a small military ship with 39 system points would have 468 hp (39*3*4).

Step 6: Choose Subsystems

Once a ship's ratings have been determined, outfit it with a number of subsystems. Each system's rating is also its C apacity. Each subsystem consumes a certain amount of capacity, as well as adding a flat cost to the price of the ship. As such, higher ship systems ratings may fit more subsystems.

Weapon Subsystem	Cost	Capacity	Range	Damage
Light Particle Beam	2,400	3	Short	4d10 Kinetic
Heavy Particle Beam	4,800	4	Short	6d10 Kinetic
Velocity Gun	19,000	3	Medium	4d8 Ballistic
Hypervelocity Gun	32,000	4	Medium	6d8 Ballistic
Light Beam Laser	3,600	4	Long	4d6 Laser
Heavy Beam Laser	6,000	6	Long	8d6 Laser
Missile Rack	2,400	2	Special	Special
Missile Tube	13,000	10	Special	Special

Missile Systems: Missile systems are special in that there exist a particularly wide variety of munitions for them to fire, often at exceptional cost compared to ammunition for other weapons systems. While the steel and titanium slugs fired by railguns and the canisters of lasing gas and isotopes used by laser and particle beam weapons are relatively low mass, missiles are generally of much higher mass and limited capacity. Often a ship will carry only one or two, unless it is a ship of war.

Missile	Cost	Capacity	Range	Damage
Long Range Nuke	5,000	8	Long	24d10 Radiation
Medium Range Nuke	3,500	4	Medium	12d10 Radiation
Short Range Nuke	500	1	Short	6d10 Radiation
Bomb Pumped Laser	3,500	4	Long	5d8 Laser*
Short Range Kinetic	150	1	Short	4d8 Kinetic
Medium Range Kinetic	500	2	Medium	4d10 Kinetic
Long Range Kinetic	1,250	4	Long	4d12 Kinetic

*Bomb pumped lasers make two separate attack rolls, each doing the listed damage on a successful hit.

Missiles are broken into one of three general categories, based on their deployment envelope: Long, Medium and Short Range (LRM, MRM, and SRM), with each step up in engagement range requiring more mass for fuel and propellant, long range missiles being almost rockets in their own right. With no organics aboard, missiles are capable of extreme acceleration curves, up to 10g or more, and when launched from a high velocity platform can overtake a target with astonishing speed.

A ship may carry up to 8 capacity worth of missiles per missile rack, and a ship with a missile tube can carry a much larger magazine onboard, generally 2 capacity per size category per cargo module dedicated as magazine space.

There are three general types of payload for missile systems, the conventional nuclear warhead, bomb pumped lasers, and simple kinetic missiles, little more than bullets with maneuvering capability. Most nukes used in space are neutron bombs, designed to kill a crew, while leaving a target vessel mostly intact (if hot for a week or so), while bomb pumped lasers can leave a ship functional except for holes punched clear through her hull, and kinetic missiles can simply annihilate a target, or just punch a hole through its hull, depending on relative velocities.

Engine Subsystems	Cost	Capacity	Effect
Engine Expansion	10,000	4	6 hour faster recharge for Hyper Drive
Enhanced Thrusters	5,000 per Size Rating	2	+.1 G Max. Acceleration
Extra Fuel Tanks	5,000 per Size Rating	4	+8 Fuel Units
Hypercore Expansion	25,000	2	+8 LY maximum hyper range
Hyper Drive	See Table	2 per Class	Allows FTL Travel
Maneuvering Jets	2,500 per Size Rating	6	+1 bonus to defense checks

Maneuvering Jets

Maneuvering jets increase a ship's rolls to evade enemy fire.

Hyper Drive Subsystem

Class	Cost (Per Size Category)	Capacity	Maximum LY Range	Days passed on ship per LY	Months Passed on earth per LY
0	5,000	2	1	120	12
1	10,000	2	2	60	11
2	40,000	4	4	30	10
3	90,000	6	8	15	9
4	160,000	8	16	7.5	8
5	250,000	10	24	4	7
6	360,000	12	36	2	6
7	490,000	14	48	1	6
8	640,000	16	64	12 hours	5
9	810,000	18	80	6 hours	5
10	1,000,000	20	100	3 hours	4

The technology that gave man the stars, the Hyper Drive is the lynchpin in human civilization, tying together their military fleets, far flung colonies and trade routes into a single cohesive civilization. A ship that fits a Hyper Drive subsystem is considered a Starship and has FTL capabilities. Depending on the class of Hyper Drive core, ships have varying access to Hyper Space, generally the larger and more powerful their HyperCore, the faster they may travel than the speed of light in both subjective and objective terms.

A hyper drive has a limited range in light years, depending on class, and requires an amount of time to charge equal to approximately 100 hours minus the engines rating of the starship jumping, to a minimum of 1 hour per class of the hyper drive. A ship uses one unit of fuel per LY of hyperspace travel,

from its maximum stockpile of ENGI*2 units (double the rating of the engines system to find the number of maximum units of fuel)

Hull Subsystems	Cost	Capacity	Effect
Ablative Armor	50,000 per Hull Point	6	Ship has resistance to Ballistic damage.
Cargo Module	500 per Size rating	1	Increase Cargo Payload based on Size
Ceramic Composite Coating	50,000 per Hull Point	6	Ship has resistance to Laser damage.
Docking Facilities	5,000	1	May carry and service 2 hull points of ships up to four sizes smaller.
Habitation Module	2,500 per Size Rating	1	Increase Crew/Passenger Payload based on Size
Heavy Armor Plating	15,000 per Hull Point	15	Minimum Defense result of 19
Life Support Expansion	5,000 per Size Rating	2	1 Habitation module requires no basic consumables
Light Armor Plating	5,000 per Hull Point	5	Minimum Defense result of 13
Medium Armor Plating	10,000 per Hull Point	10	Minimum Defense result of 16

Armor Plating
A ship may have only one armor plating subsystem. Whenever a pilot opposes a weapons attack with a piloting check and his result is lower than the listed amount, use the value provided by the plating instead.

Cargo and Habitation module scaling
Cargo and Habitation modules allow for the hauling of cargo, listed on the table in tons, or crew as appropriate. Each such subsystem includes the apparatus for maintaining the appropriate payload, including life support as necessary.

Size	Cargo (Tons)	Crew
Fine	15	4
Tiny	40	10
Small	100	25
Medium	250	50
Large	650	150
Huge	1,000	250
Gargantuan	1,250	300

Cargo and Habitation modules allow for the hauling of cargo, listed on the table in tons, or crew as appropriate. Each such subsystem includes the apparatus for maintaining the appropriate payload, including life support as necessary.

For each loaded cargo module on a ship, reduce it's maximum acceleration by .05g.

Computer Subsystems	Cost	Capacity	Effect
Autopilot	15,000	6	Ship can pilot itself
Dedicated Comp	2,500	2	Operator may Assist user of one subsystem.
Flight Systems	5,000	2	User may Assist pilot
Hypernet Node	25,000	4	+1d4 to all checks to recall information
Navigational Computer	10,000	3	Minimum Navigation Check +5 (begins at 0)
Predictive Telemetry	20,000	2	+2 Initiative

Sensors Subsystems	Cost	Capacity	Effect
Astronomical Surveyor	25,000	4	Allows preliminary scans of distant star systems
Auxillary Radar Array	5,000	4	May radar scan one additional facing simultaneously
Deep Scanning Array	50,000	3	May detect subsystems on other ships
Passive Sensor Array	25,000	3	May gauge systems on other ships without detection
Planetary Surveyor	2,500	2	May perform planetary scanning and survey
Point Defense Tracking	15,000	4	Gain advantage on attacks against incoming missiles.

| Communication Subsystems	Cost	Capacity	Effect
Interspecies Communicator	2,500	1	Allows communication with alien life
ECM	5,000	2	Jams weapons targeting systems
ECCM	5,000	2	Prevents jamming of weapons targeting systems
Comm Laser	1,000	1	Allows secure site to site communications in system at light speed
Interstellar Comm Laser	20,000	6	Allows secure system to system communication at light speed
Comsat Relay network	5,000	3	Deploys communications satellites around a planet or stellar body
Comms Jammer	15,000	4	May attempt to jam local radio communications

ECM and ECCM

Electronic countermeasures, and electronic counter countermeasures. Whenever attacking a target, compare the ECM strength of the defender to the ECCM strength of the attacker with opposed systems operations rolls. If the defender's check is successful, add the ship's communications systems bonus to their defensive rolls against the next attack.

Generic Subsystems	Cost	Capacity	Effect
Damage Control System	5,000 per System Point	3	This system has resistance to damage.

| Reinforced Bulkheads | 2,500 per System Point | 1 | Increase ship quality by 1 for calculating HP for this system |
| Hardened Crew Compartment | 500 per size category | 1 | Reduce casualties by 50% for this system |

Step 7: Assign Crew
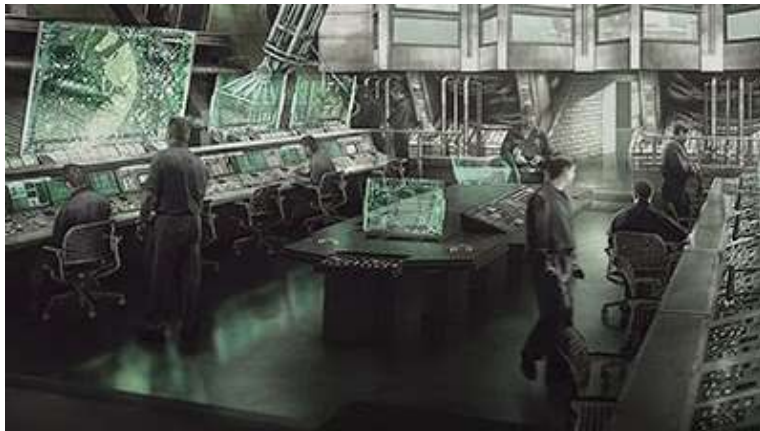
A ship requires crew to operate in an optimal fashion. A ship's crew man systems, performs maintenance, does the laundry, scrubs the deck, and a host of other tasks to varied and numerous to count. While a ship may operate with a skeleton crew of just a few, or even only one pilot, for short periods of time, anything approaching normal operations requires at least the listed minimum crew, or risk hardware malfunctions, exhaustion, and suboptimal performance.

A crew is typically provided their upkeep, room and board, and paid a share of the vessel's profits. The following is a simple and fairly common profit sharing agreement used heavily through human space. At the end of a Run, after profits have been calculated from expenses the ship's owner receives a flat 20% cut off the top and the captain 10%. Of the remaining 70% of profits, crew members each receive a number of shares. The amount of shares granted per crewman is typically dependent on the quality of that same crew.

Size	Minimum Crew	Optimum Crew
Fine	2	5
Tiny	5	20
Small	16	48
Medium	50	150
Large	150	400
Huge	300	1,000
Gargantuan	600	1,500

Talented spacers will find ships where they are paid what they are worth, and stingy captains will develop a bad reputation with potential crewmen. Officers (including the captain) receive 8 shares, as do elite specialists. Veteran Crewmen receive 6 shares, Experienced Crewmen receive 4 shares, Regular Crewmen receive 2 shares. Green crewmen still learning their professions receive a single share, and valuable experience. When paying the crew tally up the total number of shares to be paid out, and divide the remaining profit by the number of total shares to determine each share's individual value, and pay each crewman accordingly. It is common to offer incentives to the crew for good behavior, like liberty time aboard stations and at ports.

A ship might have an officer for every hundred lower ranking crewmen, but this number is disproportionately higher on smaller ships where the entire crew might technically be officers, or even shared owner operators.

A cook's mate (assistant to the ship's cook, under the division of the steward officer) might be entitled to 2 shares, earning 200 credits for a long run. With a week in port and no responsibilities beyond making departure call, he might wisely deposit 100 credits with the local Bank of Sol, and work his way from bar to bar, gambling and drinking his way through the other 100, perhaps being wise enough to

renew his spacer's license for ten credits, and buy a nice new pair of boots and some recreational videos for another 5 credits. If he is in the good graces of the quartermaster, and not over mass, he might purchase a few bottles of a good local whiskey, for 5 credits a bottle, to trade at the next port, or to enjoy while off duty during the next voyage.

Duty Stations

A ship requires at least one crewman for each subsystem to be operational, plus at least one pilot and navigator. A crew with more hands than duty stations means that it can be considered combat ready more of the time. If a pirate attacked while the only gunner was in bed, it could very well be over by the time he wakes up and gets to his position. Additionally, overworked crew will perform more poorly. Long hours at the same station will eventually lead to fatigue, and mistakes can be made. Another thing to remember is that all other general ship maintenance duties are performed by crew not on watch, so in general the more hands a ship has, the smoother and better it will operate.

Whenever a ship must make a check, such as to close range or evade an enemy missile, it rolls a d20 just like a normal character would. However, it adds two numbers (generally) to that roll. The first is the bonus provided by the system that is related to the check. The second is the crew's average proficiency with that system. Under normal circumstances, if at least a quarter of the crew of a system is of a given level experience, use their bonus for that system.

Each department can be staffed differently, such as only elite gunners in weapons, or nothing but green recruits down in the cargo bays.

| Experience	Bonus	Expected Shares
Green	-1	1
Regular	0	2
Experienced	+1	4
Veteran	+2	6
Elite	+3	8

Step 8: Paying for it all

If you've been keeping up with it all so far, you'll have figured out that a spaceship is a mighty expensive piece of hardware. In fact, your average party probably won't even own theirs. Most spaceships are owned by banking institutions, governments, investment companies and wealthy individuals. A party might operate a ship on behalf of an owner a hundred light years away and more, whom they never see, and as long as his portion of profits keep returning at a reasonable rate, they might never see a single word from their absentee landlord (spacelord? Shiplord?) until the day comes they contract a bigger better ship and drop the thing off with a lawyer.

Ideally a group of players can collaborate with their DM to figure out who owns their ship, why they were chosen as crew, and all that. However, on the off chance you just want to grab the controls and blast off to the frontier, here's a handy table to determine ownership.

Roll D%	
1-10	Bank (The Second Bank of Epsilon Eridani, always happy to extend you a loan at rotten interest rates. Gotta keep an eye on these guys.)
11-20	Investment Company (Frontier Endeavors, these guys seem pretty sleazy, but they always take you to nice dinners when you're in town.)
21-30	Retirement Fund (The Union of dockside workers, servicemen and mechanics bought this ship to serve as a pension fund.)
31-40	Eccentric trillionaire (The guy's a stickler, but he sends some good stock tips occasionally.)
41-50	Soft Drink Company (This shipment of enriched uranium brought to you by Quasar Cola, a bright point in a dark universe!)
51-75	You do! (You owe the bank the ship's cost.)
76-85	Planetary Government (Your tax dollars at work!)
86-95	Interplanetary Government (You're basically the entire space navy for this tiny polity, and they can't afford to have you hanging around just costing them money.)
96-97	"Legitimate Businessmen" (They're space mafia. Maybe Yakuza)
98-99	Winner of the Milky Way Millions lottery. He is an out of work dock worker, and he gets to fly along with the party. And he never shuts up. Ever.
100	Your mom. No, really, it's a long story…
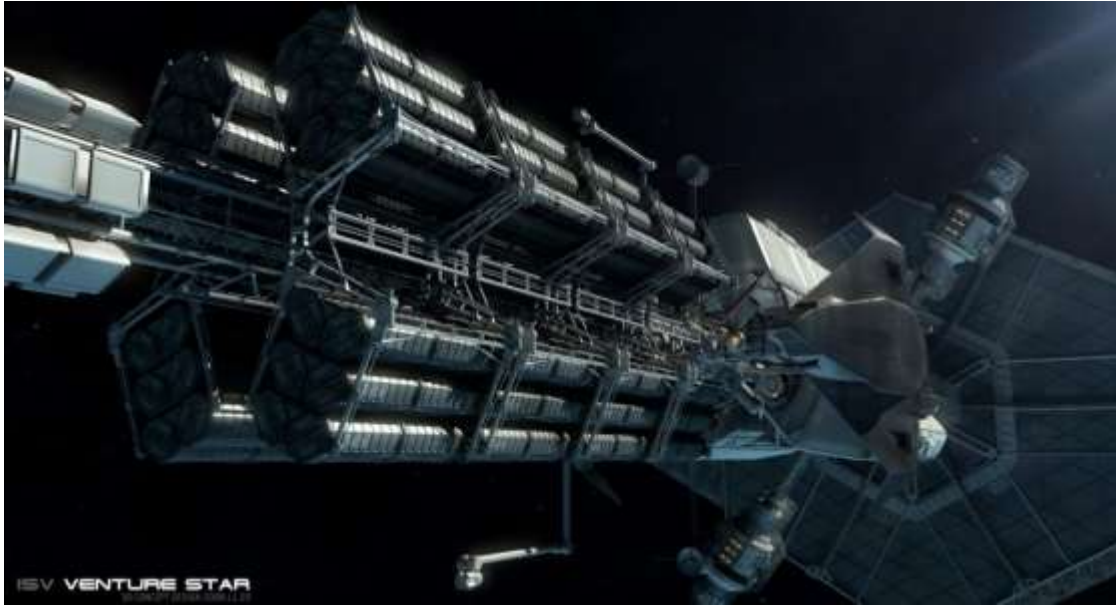
Example Ship: The FTSS *Compulsion* is a size small light cargo hauler, fresh out of the ship yards at Atomic Rockets. It is robust for its class, sporting a hull rating of 15, granting it a total of 45 maximum system points.

FTSS *Compulsion* Light Freighter
Small (Class 3), Civilian (Class 3), Atomic Rockets

Weap: 4	Engi: 19	Hull: 15	Comp: 6	Sens: 4	Comm: 4
+1 (-1)	+5 (+3)	+4 (+2)	+2 (+0)	+1 (-1)	+1 (-1)
Hp: 36	Hp: 171	Hp: 135	Hp: 54	Hp: 36	Hp: 36

Defense Bonus: +6 (min 13)
HP: 468
Initiative: +4
Cruising Acceleration: 1.9g (1.1g fully loaded)

Cargo Capacity: 800 tons
Fuel Capacity: 46 units
Maximum Hyper Range: 24 Light Years
Hyperdrive Recharge: 81 Hours

Attacks: Light Laser Cannon +1 to hit, 4d6 Laser Damage (Long Range)

Subsystems
Weapons: Light Laser Cannon
Engines: Extra Fuel Tank, Hyper Drive (Class 5), Maneuvering Thrusters
Hull: Cargo Expansion (8), Habitation Module (2), Light Armor Plating
Computers: Flight Systems, Predictive Telemetry, Dedicated weapons Comp
Sensors: Auxiliary Radar Array
Communications: Comms Jammer
Crew: 48 (Maximum 50), 24 regular crewmen, 12 Experienced Crewmen, 6 Veteran Crewmen, 5 Officers and a Captain.

Costs: 900 credits per LY or AU travelled
Profitibility: 5 Credits per ton (4 LY), 28 Credits per ton (24 LY)

The *Compulsion*'s captain operates three shifts of 12 crewmen, and in a fight will try to have their best people in control of the ship: the captain, his officers and their veteran crewmen. This ship cost 2,815,600 credits, and has some room left on its hull for expansions, 8 system points to be precise, but he has barely begun to make payments, and is loathe to sink farther into debt.

Bills to Pay

It costs credits to keep a ship fueled, spaceworthy and stocked with breathable air and edible food. This price is calculated based on the lightyear of travel, with certain assumptions factored in. Among these assumptions are that the characters must purchase supplies and fuel, and will be doing most of their own maintenance work when possible. Consult the table below to tally the costs of operating a spaceship, noting that listed costs are in credits, and applied to each AU and LY (light year) that a ship travels.   Included is an average figure, and then the breakdown for if a crew wishes to itemize their costs, such as if they capture or can otherwise obtain fuel, supplies or spare parts.

Ship Upkeep per Light Year or AU travelled.

Size	Upkeep (per Hull)	Fuel (Per Hull)	Spare Parts (Per Hull)	Docking Services (Per Hull)
Fine	10	4	3	3
Tiny	25	10	7.5	7.5
Small	60	24	18	18
Medium	150	60	45	45
Large	400	160	120	120
Huge	600	240	180	180
Gargantuan	800	320	240	240

Fuel is the mix of fuel and propellant that a ship needs to move. A ship's fuel capacity is a number of units equal to twice its engine system rating. A Unit of fuel is enough for a ship to travel either one AU at sublight, or one lightyear in hyperspace. For instance, a medium ship with a hull rating of 20 would have to pay 3,000 credits per unit of fuel replenished.

Spare parts are the mechanical pieces that a starship simply wears out, consumes or otherwise destroys. Hyper Drives are notorious for the rate at which they simply consume hyper cores, the esoteric piece of technology they are based upon.

Docking services include general ship servicing, offloading of waste products, resupply of life support materials, and basic consumables such as food and water.

A ship may put off being properly serviced, but note any missed upkeep payments, they will have to be paid eventually. Also, expect your DM to make your life miserable in various and petty (and perhaps life threatening) ways until you are properly maintained.

Space Combat

At their essence, these rules use the same basic rules for space combat between spaceships as between characters. Just with bigger numbers. And at… slightly longer range.

Space is big. Seriously, you've got no idea. A megameter is one million meters, or 1,000 kilometers. A light second is the distance light can travel in one second, and is 300 megameters. A light minute is sixty light seconds, or eighteen million kilometers. It takes 8 minutes for light to travel from the sun to the earth (one astronomical unit, or AU), that is about 8 Light minutes. It is about 2 AU from earth to mars on average, and 5 AU from earth to Jupiter with a run out to Neptune being 30 AU. Our nearest neighbor, Alpha Centauri is 4.2 light years from earth.   That is 39,900,000,000,000 Kilometers.

In space there is little resistance, hard vacuum, and no horizon. A railgun slug fired at an astonishing 3% of the speed of light will take over 30 seconds to cover one light second.   At a range of one light minute, a laser will require an entire minute to cover the distance, and you will not be able to see if a hit was scored for another minute after that. A shipkiller nuke able to overtake an enemy vessel at ranges measured in light seconds is almost a tiny rocket ship in and of itself.

On top of the time lag, the tiniest deviation in targeting, or the unexpected movement of a target will cause an incredibly near miss to miss by a mile. And that is a unit of measurement as tiny as it is out of date.

Range	Distance
Short	Less than 100 Mm
Medium	100 Mm to 300 Mm (1 LS)
Long	Between 1 Light Second (LS) and 1 Light Minute (LM)
Out of Range	More than one Light Minute

Space combat is best handled abstractly. The rules included only include three vaguely defined ranges, or engagement envelopes, for various weapons systems.

Whenever your ship enters combat, your DM will inform you of the range of the encounter, short medium or long. A weapon may fire at one range increment above its expected range at disadvantage, and attacks will deal only half damage at this range. Weapons firing at ranges shorter than their expected range gain advantage on attack rolls.

A ship with 1g of acceleration can cross short range in 23 minutes of continuous burn. In another 18 minutes of burn, this ship has crossed the entirety of medium range. To cross out of long range and out of range entirely will take another four and a half hours. Given these vastly differing scales of time, a round of space combat is handled flexibly in regards to elapsed time.

In a round of combat, a character might fire a weapons subsystem, another might activate the ECM subsystem, while a third attempts to maneuver the ship and evade enemy fire. A fourth player might be making emergency repairs to a downed subsystem, while a fifth is attempting navigation to get out of the system faster. Combat can get hectic, and far from just plugging away at the enemy ships, is a time for skills to shine.

Instead of using a simple AC value, each time an attack is made, this is an opposed roll between the attacker's weapons system, adding the proficiency bonus (if any) and relevant ability score of the attacker along with the weapons system bonus of his ship, opposed by a similar check from the opposing pilot using their proficiency bonus (if any) and their relevant ability score along with the engines system bonus of their ship.
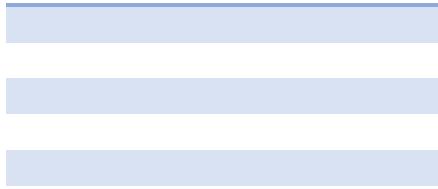
Radiation Exposure
1 Disadvantage on ability checks
2 Speed halved
3 Disadvantage on attack rolls and saving throws
4 Hit point maximum halved
5 Speed reduced to 0
6 Death

Systems Rating	Systems Efficiency Bonus
1-4	-1
5-8	0
9-12	+1
13-16	+2
17-20	+3
21-25	+4
26-30	+5
31-45	+6
46+	+7

Name

Size   Quality   Class

_____
Initiative

Defense

Max HP

Current HP

Manufacturer   Registration

_____
Hyper Range

(hrs)

Hyperdrive
Recharge

_____
Acceleration

_____
Fuel Capacity

Cargo
Capacity

_____ Tons

Weapons

_____
Rating

Bonus   HP

Computers

_____
Rating

Bonus   HP

Engines

_____
Rating

Bonus   HP

Sensors

_____
Rating

Bonus   HP

Hull

_____
Rating

Bonus   HP

Communications

_____
Rating

Bonus   HP

Attacks

_____

_____

_____

_____

Defenses

_____

_____

_____

_____

Notes: _____

_____

Weapons

_____**Bonus**   _____**Assigned Crew**

Max HP

Damage

_____

_____

_____

_____

_____

_____

Subsystems

Computers

_____**Bonus**   _____**Assigned Crew**

Max HP

Damage

_____

_____

_____

_____

_____

_____

Subsystems

Engines

_____**Bonus**   _____**Assigned Crew**

Max HP

Damage

_____

_____

_____

_____

_____

_____

Subsystems

Sensors

_____**Bonus**   _____**Assigned Crew**

Max HP

Damage

_____

_____

_____

_____

_____

_____

Subsystems

Hull

_____**Bonus**   _____**Assigned Crew**

Max HP

Damage

_____

_____

_____

_____

_____

_____

Subsystems

Communications

_____**Bonus**   _____**Assigned Crew**

Max HP

Damage

_____

_____

_____

_____

_____

_____

Subsystems

Cargomaster's Manifest

Ship's Cash: _____   Cargo Capacity: _____   Cost Per LY: _____   Cost per ton per LY: _____

Cargo	Class	Buy Price	Sell Price	Tons	Invested Cash	Revenues per Ton	Total Revenue

Cargo Revenue: _____

Profits

Cargo Revenue **(_____)** + Other Revenues **(_____)** − Costs **(_____)** = Profits **(_____)**

Paymaster's Logs

Pay Grade	Shares	Crew	Shares
Officers	8 ea.		
Elite	8 ea.		
Veteran	6 ea.		
Experienced	4 ea.		
Regular	2 ea.		
Green	1 ea.		

Total Shares_____

Total **Profits** _____

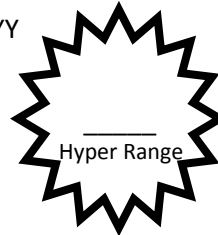| Portion	
Owner's Share (20% of profits)	
Captain's Share (10% of profits)	
Crew's Share (70% of profits)	
Value per Crew Share (70% divided by # shares)	

Navigator's Tools

Ship Max. Fuel: _____   Ship Current Fuel: _____

Current Date On Earth: (_____ / _____ / _____)

MM   DD   YY
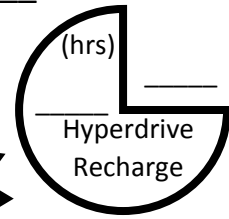
FTL Travel Time Estimator

Class	Maximum LY Range	Days passed on ship per LY	Months Passed on earth per LY
0	1	120	12
1	2	60	11
2	4	30	10
3	8	15	9
4	16	7.5	8
5	24	4	7
6	36	2	6
7	48	1	6
8	64	12 hours	5
9	80	6 hours	5
10	100	3 hours	4

(hrs)

_____

Hyperdrive Recharge

_____ Hyperdrive Readiness

_____ Hyper Range

Hyper Jump Calc

LY distance: _____

Shipboard Time Elapsed: _____

Objective Time Elapsed: _____

Sublight travel time estimator

Ship Max Acceleration: _____

Acceleration (g)	1 AU (turnaround)	1 AU (full burn)
0.1	217	153
0.2	154	108
0.3	125	88
0.4	108	76
0.5	97	68
0.6	88	62
0.7	82	58
0.8	76	54
0.9	72	51
1	68	48

Ship Loaded Acceleration: _____

Acceleration (g)	1 AU (turnaround)	1 AU (full burn)
1.1	65	46
1.2	62	44
1.3	60	42
1.4	58	41
1.5	56	39
1.6	54	38
1.7	52	37
1.8	51	36
1.9	49	35
2	48	34

Time in Hours

Engineer's Log

When Taking damage, roll d20 and consult table

1: Damage applied to system with least hp.

2-4: Weapons systems hit.

5-7: Engines Systems hit.

8-10: Hull systems hit.

11-13: Computers systems hit.

14-16: Sensors systems hit.

17-19: Communications systems hit.

20: Damage applied to system with most hp.

Damage Conditions

¾ HP *Minor Damage*: Use of subsystems grants disadvantage until a dc 10 engineering or repair check is made.

½ HP *Severe Damaged*: Use of subsystems grants disadvantage until a dc 20 engineering or repair check is made.

¼ HP *Critical Damage*: Subsystems offline until a dc 20 engineering or repair check made.

0 HP *Systems Failure*: Subsystems Disabled

Further hits on a subsystem are applied to the system with the most remaining HP.

Weapons System Max HP: _____

¾ HP:_____   ½ HP:_____   ¼ HP:_____

Current HP

Computers System Max HP: _____

¾ HP:_____   ½ HP:_____   ¼ HP:_____

Current HP

Engines System Max HP: _____

¾ HP:_____   ½ HP:_____   ¼ HP:_____

Current HP

Sensors System Max HP: _____

¾ HP:_____   ½ HP:_____   ¼ HP:_____

Current HP

Hull System Max HP: _____

¾ HP:_____   ½ HP:_____   ¼ HP:_____

Current HP

Communications System Max HP: _____

¾ HP:_____   ½ HP:_____   ¼ HP:_____

Current HP