Under The Hood - Building Starships

If there's one thing about the Internet you can count on, it's that there are a ton of people out there who are obsessed with the same things you are...and with Star Trek, doubly so.

Rather than reinventing the wheel, I decided early on to make my ship write-ups compatible with DITL.org. While the numbers are occasionally insane and require tweaking, it's still probably the best and largest archive of ship statistics out there--using them saves a great deal of work and they're fairly consistent.

Once you decide on a write-up to convert, it's a simple matter of following the steps.

If you don't want to use DITL, or you're designing a ship completely from scratch, then use the following lists as general suggestions and slot your new ship in where appropriate.

Side note: While TOS, TMP and TNG era work fairly well under this system, Pre-TOS tends to break down somewhat. If you were to run an Enterprise-era game with these rules, you'd have to scale up the numbers so that damage would not be so granular.

The Enterprise-era systems are currently listed here just for comparison's sake and to give an idea of scale...or for use as archaic ship designs.

1. Determine the ship's size.

The mass of the ship determines SHP and base maneuverability.

Minimum Tonnage	SHP	Approximate Size	Maneuverability
Small	1	Man In Space Suit	+3/+5 (+5)
1 ton	5	Shuttlecraft	+2/+4 (+4)
100 tons	10	Delta Flier	+2/+4 (+4)
1k	20	Raven	+2/+4 (+3)
25k	30	Generic Civilian Ship, Daedalus	+2/+4 (+3)
75k	45	Nova Class	+1/+3 (+3)
150k	60	Romulan Bird of Prey	1/+3 (+2)
250k	80	Saladin, Hermes, Ptolemy, D-7	+1/+3 (+2)
400k	90	Olympic	+0/+2 (+1)
500k	100	Constitution, Miranda	+0/+2 (+0)
675k	120	Intrepid	+0/+2 (+0)
750k	150		+0/+2 (+0)
875k	180	Federation	+0/+2 (+0)
1m	200	Cheyenne	+0/+2 (+0)
1.5m	300		+0/+2 (+0)
2m	400	Excelsior	-1/+1 (-1)
3m	600	Sovereign	-1/+1 (-1)
4m	800	Galaxy	-1/+1 (-1)
6m	1200		-1/+1 (-1)
8m	1600		-2/+0 (-2)
12m	2400	Borg Tactical Sphere	-2/+0 (-2)
16m	3200	Dominion Battleship	-2/+0 (-2)
24m	4800		-2/+0 (-2)
32m	6400		-3/-1 (-3)

Light = -25% SHP
Double = +10% SHP
Heavy = +25% SHP

Monotanium = +0
Duranium = +25%
Duranium/Tritanium = +50% SHP

High Level Structural Integrity Field (HLSIF): +10% SHP.

Armor, per 5cm (rounded) = x2 derived DR.

Polarized Armor: Treat as having a Shield Rating of 1 plus 1 for every 5 cm of thickness. This is a more limited technology than true shields, however, and it is entirely up to the GM how limited its capabilities are in play. At the very least, I'd recommend making it so you can't route energy to or from it. Otherwise acts as normal armor.

Enhanced Polarized Armor: As per normal polarized armor, except with 1 added SR.

Ablative Armor: Adds an effective 2 million tons to the ship's tonnage only for the purposes of determining its base SHP, or bumps it up to the next weight category, whichever is better. Otherwise acts as normal armor. You can pretty much call this the "Defiant Rule". :-)

Enterprise-era: Ships in the Enterprise era were more fragile in general than later eras—after calculating SHP, divide the total by 2 and then calculate DR from that.

If the granularity of the table above at higher tonnages offends you, you can make extra increments in between, say if you really need to distinguish a 2.5 million ton starship from a 2 million ton starship.

Now, look under the defenses entry on DITL to see what the hull is constructed of. Add up all the bonus SHP first, then multiply the base by that percentage. This is the ship's total SHP.

Now multiple that number by .01. This the ship's base DR. If it has armor, then multiply it by the appropriate amount as noted under the entry on armor above.

Some ships for comparison's purposes, along with their typical damage ratings:

Class of ship	Damage	SHP/DR	Mass And Armor Details
Constitution	4d10	110/1	600k, Mono Double Hull
Refit Constitution	6d10	135/1	620k, Dura Double Hull
Miranda	3d10	100/1	520k, Mono Single hull
Saladin	3d10	80/1	300k, Mono Single hull
NX	1d6	30/1	280k, Light Mono Single hull plus 5 cm Polarized armor
Galaxy	50d10	1280/51	4.9m, Dura/Trit Double hull plus 9 cm High density armor
Ambassador	30d10	640/13	2.3m, Dura/Trit Double hull plus 7 cm High density armor
D-7	6d10	108/2	300k, Heavy Mono Double hull plus 5 cm High density armor
D'Deridex	65d10	880/35	4.3m, Dura/Trit Double, plus 11 cm High Density armor
Defiant	70d10	780/125	355k, Heavy Dura/Trit Double, 20 cm Ablative, HLSIF
Sovereign	85d10	2340/94	3.5m, Heavy Dura/Trit Double, 10 cm Ablative, HLSIF

Maneuverability:

Use the last column on the table above to determine a base maneuverability and then modify accordingly:

+0/+1 (+2) if ship has a reputation for nimbleness
+0/-1 (-2) if ship has a reputation of being something of a barge

If the ship doesn't maneuver at all (i.e. is a space station) then there is no maneuver bonus and the Active Defense is the same as the Passive. Subtract 5 from all ratings.

Example: A Saladin masses 300,000. This gives it a maneuverability of +1/+3 (+2). A Hermes class ship weighs roughly the same, but has a reputation of being rather nimble. Its maneuverability total is +1/+4 (+4). In contrast, a space station weighing in at 450,000 tons will have a base of +0/+2 (+1), modified down to -5/-5 (n/a) since it can't maneuver at all.

Impulse:

There's a disturbing lack of authoritative impulse speed ratings out there, so I just used the following guidelines:

- If the ship uses the Zefram scale (i.e it's TOS-era), then it maxes out at .5c impulse.
- If the ship uses the TNG scale (which most write-ups from the movie era and later do), then assume .75c maximum Impulse.
- If the ship can do Warp 9.4 (on the TNG scale) or better, maximum Impulse is around .95c.

Halve these numbers for ships that aren't warp capable.
Adjust downwards .1 or .2c if the ship has a reputation for slowness.
Adjust upwards .1 or .2 c if it's a fast, sleek ship.

Note that Impulse can't exceed 1.0c, even in Star Trek. If you need something faster than .95c just use .99c and add as many 9's to the end as necessary. :-)

2. Weapons.

Keep the flavor text in the DITL.org entry, but go by TeraWatts rating:

Divide TeraWatts by 1,000 for the total number of d10, rounding off to the nearest d10. If the rating is <100 TeraWatts then the ship does 1d6 damage. If less than 10 TeraWatts, 1d4 damage.

To keep dice rolling to a sane level, if the ship does more than 8d10, attempt to group it in multiples of 4-8d10. So, a Galaxy class ship that does 50d10 damage is rolled 5d10x10. If you have to round the damage to get a clean multiplier, then round down. For example, the Excelsior class (18,500 TeraWatts rating) would do 18d10 because that's roundable to 6d10x3—19d10 would be an irritating number to work with.

Bonuses that give extra damage per die will still add full damage, no matter how the dice are split. For example, if the Navigator on the Defiant rolls 20 points over the required DC, then the damage roll will still be at at +140, even if the base damage is being rolled 7d10x10.

Examples:

TeraWatts	**Ship Class**	**Damage**
70,000	Defiant	7d10x10
60,000	Klingon Vor'cha	6d10x10
50,000	Galaxy	5d10x10
18,500	Excelsior	6d10x3
7,000	Federation	7d10
5,500	Klingon D-7	6d10
4,000	Constitution	4d10
1,500	Ptolemy	2d10
850	Hermes	1d10

Fire Arcs: Assume that every 2 banks of phasers covers one fire arc. Usually ships cover the front first, then both sides and then rear. After that point, double (and triple) up the fire arcs.

The Low End Of The Scale

Certain writeups on DITL mention very low TeraWatt ratings. These are typically for either shuttlecraft or ships from the Enterprise era. Use the following dice ranges:

TeraWatts	Damage
1- 4	1d2
5-10	1d3
10-20	1d4
21-99	1d6
100-500	1d8
501+	1d10

Photon Torpedoes:

Torpedoes do damage based on their generation:

Type I = Enterprise-era, pre-TOS	2d10
Type II = TOS	5d10
Type III = TMP	8d10
Type IV = TNG	5d10x2
Quantum = TNG, late era	5d10x4

The type of bank (torpedo launcher) determines how many volleys per round can be fired and how many points are needed above the target number for these additional torpedoes to strike:

Mod 2	Pre-TOS	1 shot only	N.A.*
2nd class	TOS/TMP	1 per bank	+1 hit for every 5 over
Standard	TNG	2 per bank	+1 hit for every 3 over
Burst, Type 1	TNG (Ambassador)	3 per bank	+1 hit for every 3 over**
Burst, Type 2	TNG	4 per bank	+1 hit for every 2 over**
Burst, Type 3	TNG (Galaxy/Nebula)	5 per bank	+1 hit for every 2 over**
Burst, Type 4	TNG (Sovereign)	6 per bank	+1 hit for every 1 over**
Pulse Fire	Treat as similar to a Burst, Type 2.**		
Mod 3	Pre-TOS, Treat as similar to 2nd class		

* Use for any torpedo system more primitive than a 2nd class bank.

** May target multiple enemies.

Quantum torpedo launchers tend to mimic standard torpedo launchers: the Defiant's pulse fire quantum torpedo launcher is roughly equivalent to a Type 2 Burst. The Sovereign's is similar to a Type 4 Burst.

Alien technology gets rather weird at times. Rather than list them all, just pick a type of Federation launcher that fits the feel and assumed capabilities of the alien torpedo launcher and move on.

Addendum: Ridiculously Large Numbers

But wait, this supership writeup on DITL is way too powerful! What do I do!?

You have 3 options:

1. Suck it up. These ships will do a one-hit kill on anything they hit. End of story.

2. Tone them down. Reduce their damage to make them a challenge and frightening, but not instantly fatal.

3. In some cases, you can split them into separate weapon banks and fire arcs. For example, a Klingon Negh'var has two weapons banks--its primary guns, designed to hit enormous space

installations and its smaller point defenses. You could make a case that it has two separate attacks, a huge 5d10x30 attack that it almost never uses against ships and another 5d10x10 attack against normal ships.

Likewise, a Borg cube might have to split its (massive) number of dice amongst its several faces. True, 7500 dice over 6 faces is still 1250d10 per ship, but it's a start...

In cases where a ship has its weapons split amongst several banks, then the crew of that ship can make separate attack rolls without penalty. A gunner has to be assigned to each extra bank, however.

3. Shields

Again, keep the flavor text given in the DITL entry, but go by TeraJoules rating.

If the shields' TeraJoules are rated between **200,000** and **1,000,000**, **divide that number by 20,000** to get SR.

If the shields' TeraJoules are rated more than **1 million**, **divide by 13,000** to get SR**.**

If the shields are rated close to the dividing line (**900,000 - 1 million**), use both and then average the two scores for the final SR. This prevents the jump from the two scales from being too dramatic.

If the shields are rated less than 200,000, use the following chart:

TeraJoules	**SR**
< 100	1
100- 500	2
500- 10k	3
10k- 39k	4
40k- 79k	5
80k- 99k	6
100k-119k	7
120k-159k	8
160k-200k	9

Some sample ships:

TeraJoules	**Example**	**SR**
810	Shuttlecraft	3
40.5k	Hermes, Romulan Bird of Prey, Daedalus	5
54k	Ptolemy	5
207k	Saladin, D7	10
270k	Miranda	14
351k	Constitution	18
456k	Federation	23
621k	Miranda (Refit)	31
702k	Constitution (Refit)	35
1.2m	Excelsior	92
2m	Ambassador	154
2m	Vor'cha	154
2.3m	D'Deridex	178
2.3m	Defiant	178
2.7m	Galaxy	208
4.6m	Sovereign	354

Almost done!

4. Edit Insanity

DITL is mostly pretty good, but there are occasional entries that just don't work within the framework of this game. Glance over the ship's statistics. Compare it with other ships of the era.

For example, the Federation class vessels' shield systems as listed under the DITL entry are highly underpowered. The Constitution class's shields are extremely overpowered.

So, I go back to the flavor text for the Federation class dreadnought. It states that its shields are roughly 30% stronger than the Constitution. I then do the same with the Constitution over the Miranda (it's a slightly smaller ship and this "feels" right), since I'm fairly happy with the Miranda's stated shield rating.

This gives a rating for the Constitution of 1.3 x the Miranda's 270k TeraJoules or 351k TeraJoules. Going off of that, the Federation class starship should have shields of 456k TeraJoules (30% more than the Constitution's), which feels about right for a dreadnought class ship in the TOS era.

I go through a similar process for the Saladin class destroyer since 80k TeraJoules is pretty inadequate for a class of ship that will see any significant amount of combat in the TOS era. Making it 30% weaker than the Miranda gives us a number of 207k TeraJoules. The D-7, for similar reasons, gets the same treatment. If anybody quibbles, you can just say that the stats given on DITL were for a ship during the early stages of the run--Starfleet installed upgrades at a later point.

At this point, it's good to run through a few sample damage situations to make sure the numbers came out right with the right feel.

5. Extras.

Certain types of ship have additional capabilities. Scout vessels have better sensors than the stock variety, allowing for an equipment bonuses. Other ships might have cloaking devices or increased atmospheric capability.

Really, the sky is the limit--if there's any doubt of the exact effects, either hand wave the details, or use an existing ship with similar capabilities as a guideline. A good rule of thumb is to give a ship a +2 or +20% (whichever makes sense) to situations in which an upgraded system might come into play.

Outside of combat, unless it's very, very important, don't worry too much about differences in ship capabilities between series generations. In Star Trek--at least the way it's portrayed--a sensor array is mostly a sensor array no matter when it's installed--it's primarily an excuse for the GM to feed plot information to the PC's. There's no point in agonizing too much over numbers when Star Trek isn't even that consistent with itself on many points.

6. Personalize.

In the Star Trek universe, ships have almost as much personality as the characters themselves. In any vessel the characters will spend any significant amount of time on, there should be certain quirks and differences that distinguish the ship from others in its class. Perhaps there's a persistent and annoying squeak in the Captain's quarters. Perhaps it's the only ship of its line that has a two floor observation deck. Perhaps Starfleet installed upgrades to certain of its systems to prepare it for its current mission. Even something so minor as the location of the Chief Engineer's personal still can add a great deal of flavor to a ship.

Kit Bashing For People Who Don't Use Kits

But wait, I'm making an entirely new ship and I'm stuck on ideas about what it looks like. What do I do?

When you need a new ship, and need a start on figuring out what it looks like...

d10	Shape	Stance	Predominant Colors
1	Saucer	Swoop	Ivory
2	Saucer	Swoop	Blueish White
3	Cylindrical	Squat	Blueish White
4	Block	Squat	Greenish
5	Block	Forward-leading aspect	Greenish
6	Crescent	Trailing	Red/Rust
7	Crescent	Tight/Compact	Yellowish
8	Sphere	Tight/Compact	Gray/Unfinished Metal
9	Teardrop	Vertical	Gray/Unfinished Metal
10	Teardrop	Ring-like	Mottled (roll twice)

Number of sections: Roll 1d4+1. The first section will always be some variant of warp nacelles. Usually there will be two and they will be attached symmetrically. Roll for the remaining sections on the Shape column.

Stance: This is the overall aspect of the ship. Stance is a general descriptor suggesting how the segments are arranged. The classic Klingon design, for example, is a "swoop" design.

"Vertical" might suggest a vertical arrangement of segments, making for a tall, thin ship. "Trailing" would be the classic freighter configuration, with the segments strung out behind the leading segment. Obviously, this requires a great deal of interpretation--think of it as Legos with starship hulls.

Certain races do have certain tendencies:

Federation ships will nearly always have one saucer section, Klingons will almost always have a swooping stance. Klingon ships will almost always be greenish; Federation will almost always be ivory or blueish white colored.

Sample ship:

I decide I need a quick freighter, but I need it to be detailed enough that I can describe its appearance to my players.

I roll 1d4+1, and the result is 3. There are 4 sections:

1 = warp nacelles
2 = crescent
3 = block
4 = crescent

Overall stance = swoop
Overall color scheme = green

It's a freighter...and with a swoop stance I picture it as being able to embrace cargo containers. I put one crescent section in back, connecting the two warp nacelles, put the other, smaller, one up front behind the blocky bridge/main section. The smaller front crescent extends downward on either side to clasp cargo containers.

I name this the Lyran FR-07.

Sample 2:

I need a big, scary alien dreadnought. I'm completely stuck for ideas and know the players will be annoyed if I can't describe the mysterious vessel that's beating them silly.

I roll 5 sections:

1 = warp nacelles
2 = block
3 = saucer
4 = teardrop
5 = cylindrical

Overall stance = Trailing

Overall color scheme = Unfinished Metal

The Maladarian *Hammer of Vengeance* looks like a battering ram--the saucer section is vertically placed, relative to the usual Federation method and forms a ring around the main teardrop section. Trailing behind that is a large blocky section that transitions into a cylinder where the impulse engines are located. Rather than giving it the usual number of warp nacelles, I decided to give it three, spaced equidistant around the trailing hull. The overall effect is similar to a TMP-era Starbase, upended onto its side.