Pathfinder to d20 Modern/Future

This PDF is a conversion of d20 Modern and d20 Future rules to be used with the Pathfinder rules. These rules are optional for those who wish to run Pathfinder games in modern or futuristic settings.

As opposed to Gold Pieces, the PDF uses GPE (Gold Piece Equivalent).

This rulebook is written by Jeremy Harris.

New Skills

The following are new skills which can be incorporated into the game that can't use previous skill checks. The skills are up to the GM to allow in their game, as not all are useful in certain games.

Computer Use (Intelligence)

Check: Most normal computer operations don't require a Computer Use check. However, searching an unfamiliar network for a particular file, writing computer programs, altering existing programs to perform differently (better or worse), and breaking through computer security are all relatively difficult and require skill checks.

Find File: This skill can be used for finding files or data on an unfamiliar system. The DC for the check and the time required are determined by the size of the site on which the character is searching.

Finding public information on the Internet does not fall under this category; usually, such a task requires a Research check. This application of the Computer Use skill only pertains to finding files on private systems with which the character is not familiar.

Size of Site	DC	Time
Personal Computer	10	1 round
Small office network	15	2 rounds
Large office network	20	1 minute
Massive corporate network	25	10 minutes

Defeat Computer Security: This application of Computer Use can't be used untrained. The DC is determined by the quality of the security program installed to defend the system. If the check is failed by 5 or more, the security system immediately alerts its administrator that there has been an unauthorized entry. An alerted administrator may attempt to identify the character or cut off the character's access to the system.

Sometimes, when accessing a difficult site, the character has to defeat security at more than one stage of the operation. If the character beats the DC by 10 or more when attempting to defeat computer security, the character automatically succeeds at all subsequent security checks at that site until the end of the character's session (see Computer Hacking below).

Level of Security	DC
Minimum	20
Average	25
Exceptional	35
Maximum	40

Computer Hacking

Breaking into a secure computer or network is often called hacking.

When a character hacks, he or she attempts to invade a site. A site is a virtual location containing files, data, or applications. A site can be as small as a single computer, or as large as a corporate network connecting computers and data archives all over the world the important thing is that access to the site connects the user to everything within it. Some sites can be accessed via the Internet; others are not connected to any outside network and can only be tapped into by a user who physically accesses a computer connected to the site.

Every site is overseen by a system administrator the person in charge of the site, and who maintains its security. Often, the system administrator is the only person with access to all of a sites functions and data. A site can have more than one system administrator; large sites have a system administrator on duty at all times. A character is the system administrator of his or her personal computer.

When a character hacks into a site, the visit is called a session. Once a character stops accessing the site, the session is over. The character can go back to the site in the future; when he or she does, it's a new session.

Several steps are required to hack into a site:

Covering Tracks: This step is optional. By making a Computer Use check (DC 20), a character can alter his or her identifying information. This imposes a -5 penalty on any attempt made to identify the character if his or her activity is detected.

Access the Site: There are two ways to do this: physically or over the Internet.

Physical Access: A character gains physical access to the computer, or a computer connected to the site. If the site being hacked is not connected to the Internet, this is probably the only way a character can access it. A variety of skill checks may be required, depending on the method used to gain access.

Internet Access: Reaching a site over the net requires two Computer Use checks. The first check (DC 10) is needed to find the site on the net. The second is a check to defeat computer security (see the Computer Use skill description). Once a character has succeeded in both checks, the character has accessed the site.

Locate What You're Looking For: To find the data (or application, or remote device) the character wants, make a Computer Use check. See Find File under the skill description.

Defeat File Security: Many networks have additional file security. If that's the case, the character needs to make another check to defeat computer security.

Do Your Stuff: Finally, the character can actually do what he or she came to do. If the character just wants to look at records, no additional check is needed. (A character can also download data, although that often takes several rounds or even several minutes, for especially large amounts of information to complete.) Altering or deleting records sometimes requires yet another check to defeat computer security. Other operations can be carried out according to the Computer Use skill description.

Defend Security: If the character is the system administrator for a site (which may be as simple as being the owner of a laptop), he or she can defend the site against intruders. If the site alerts the character to an intruder, the character can attempt to cut off the intruder's access (end the intruder's session), or even to identify the intruder.

To cut off access, make an opposed Computer Use check against the intruder. If the character succeeds, the intruder's session is ended. The intruder might be able to defeat the character's security and access his or her site again, but the intruder will have to start the hacking process all over. Attempting to cut off access takes a full round. One surefire way to prevent further access is to simply shut the site down. With a single computer, that's often no big deal but on a large site with many computers (or computers controlling functions that can't be interrupted), it may be time-consuming or even impossible.

To identify the intruder, make an opposed Computer Use check against the intruder. If the character succeeds, the character learns the site from which the intruder is operating (if it's a single computer, the character learns the name of the computer's owner). Identifying the intruder requires 1 minute and is a separate check from cutting off access. This check can only be made if the intruder is accessing the character's site for the entire length of the check if the intruder's session ends before the character finishes the check, the character automatically fails.

Degrade Programming: A character can destroy or alter applications on a computer to make use of that computer harder or impossible. The DC for the attempt depends on what the character tries to do. Crashing a computer simply shuts it down. Its user can restart it without making a skill check (however, restarting takes 1 minute). Destroying programming makes the computer unusable until the programming is repaired. Damaging programming imposes a -4 penalty on all Computer Use checks made with the computer (sometimes this is preferable to destroying the programming, since the user might not know that anything is wrong, and won't simply decide to use a different computer).

A character can degrade the programming of multiple computers at a single site; doing so adds +2 to the DC for each additional computer.

Scope of Alteration	DC	Time
Crash Computer	10	1 minute
Destroy Programming	15	10 minutes
Damage Programming	20	10 minutes

Fixing the degraded programming requires 1 hour and a Computer Use check against a DC equal to the DC for degrading it +5.

Write Program: A character can create a program to help with a specific task. Doing so grants the character a +2 circumstance bonus to the task.

A specific task, in this case, is one type of operation with one target.

The DC to write a program is 20; the time required is 1 hour.

Operate Remote Device: Many devices are computer-operated via remote links. If the character has access to the computer that controls such systems, the character can either shut them off or change their operating parameters. The DC depends on the nature of the operation. If the character fails the check by 5 or more, the system immediately alerts its administrator that there has been an unauthorized use of the equipment. An alerted administrator may attempt to identify the character or cut off his or her access to the system.

Type of Operation	DC	Time
Shut down passive remote (including cameras and door locks)	20	1 round per remote
Shut down active remote (including motion detectors and alarms)	25	1 round per remote
Reset Parameters	30	1 minute per remote
Change passcodes	25	1 minute
Hide evidence of alteration	+10	1 minute
Minimum Security	-5	-
Exceptional Security	+10	-
Maximum Security	+15	-

Special: A character can take 10 when using the Computer Use skill. A character can take 20 in some cases, but not in those that involve a penalty for failure. (A character cannot take 20 to defeat computer security or defend security.)

Time: Computer Use requires at least a full-round action. The GM may determine that some tasks require several rounds, a few minutes, or longer, as described above.

Drive (Dexterity)

Check: Routine tasks, such as ordinary driving, don't require a skill check. Make a check only when some unusual circumstance exists (such as inclement weather or an icy surface), or when the character is driving during a dramatic situation (the character is being chased or attacked, for example, or is trying to reach a destination in a limited amount of time). When driving, the character can attempt simple maneuvers or stunts. See Driving a Vehicle for more details.

Try again: Most driving checks have consequences for failure that make trying again impossible.

Special: A character can take 10 when driving, but can't take 20.

Time: A Drive check is a move action.

Linguistics

The following are additional languages that are added to the Linguistics choices.

- **Algic:** Algonkin, Arapaho, Blackfoot, Cheyenne, Shawnee.
- **Armenian:** Armenian
- **Athabasan:** Apache, Chipewyan, Navaho.
- **Attic:** Ancient Greek*, Greek.
- **Baltic:** Latvian, Lithuanian.
- **Celtic:** Gaelic (Irish), Gaelic (Scots), Welsh.
- **Chinese:** Cantonese, Mandarin.
- **Finno-Lappic:** Estonian, Finnish, Lapp.
- **Germanic:** Afrikaans, Danish, Dutch, English, Flemish, German, Icelandic, Norwegian, Swedish, Yiddish.
- **Hamo-Semitic:** Coptic*, Middle Egyptian*.
- **Indic:** Hindi, Punjabi, Sanskrit*, Urdu.
- **Iranian:** Farsi, Pashto.
- **Japanese:** Japanese.
- **Korean:** Korean.
- **Romance:** French, Italian, Latin*, Portuguese, Romanian, Spanish.
- **Semitic:** Akkadian (aka Babylonian)*, Ancient Hebrew*, Arabic, Aramaic*, Hebrew.
- **Slavic:** Belorussian, Bulgarian, Czech, Polish, Russian, Serbo-Croatian, Slovak, Ukrainian.
- **Tibeto-Burman:** Burmese, Sherpa, Tibetan.
- **Turkic:** Azerbaijani, Turkish, Uzbek.
- **Ugric:** Hungarian (aka Magyar).

*This is an ancient language. In the modern world it is spoken only by scholars, or in some cases by small populations in isolated corners of the world.

Progress Levels

The following Progress Levels (PL abbreviation) are standard settings for campaigns using modern/futuristic technology. Weapons, Armor, and other tech should be restricted based upon which PL the campaign is set in.

Progress Levels do not have to be at the same setting for all aspects (example: a setting might be PL 5 for communications and vehicles, but only PL 4 for space travel).

PL 1: Bronze/Iron Age

When a civilization learns to create bronze from copper and tin, it has advanced to the Bronze Age, which allows it to advance to working iron, an even more durable metal. Settlements grow from small villages to large ones and eventually to small towns, fostering trade, which in turn leads to larger and larger settlements, right on up to first small cities.

PL 2: Middle Ages

The hallmark of this Progress Level is the first real mass-communication system: printing. The ability to create and share multiple copies of books enables architecture, commerce, metallurgy, and mathematics to make great strides. At the same time, the populations of Bronze Age nations begin migrating toward cities, making urban areas more important than the surrounding farms for the first time in history.

PL 3: Age of Reason

The Age of Reason supplants faith- and superstition-based logic systems with scientific experimentation and systematic research. The study of chemistry, medicine, biology, astronomy, and even electromagnetism all thrive- aided by the invention of the first crude telescopes and microscopes.

PL 4: Industrial Age

The Industrial Age is characterized by the invention of the steam engine and electric power, and the development of the assembly line, all of which combine to create a boom in commerce and industry. Communication also leaps forward with the telegraph, telephone, and primitive radios.

PL 5: Information Age

Computer technology and electronic devices define the Information Age, and the internal combustion engines replace steam engines. Borders between countries gradually fade away as corporations establish what amount to miniature embassies in every developing nature.

PL 6: Fusion Age

The Fusion Age is named for the most common renewable source of energy developed in this period. At the same time, artificial evolution through genetic manipulation becomes feasible and ranged energy weapons begin to appear.

PL 7: Gravity Age

Gravity induction engines replace fusion engines, ushering in this age. Hovervehicles and interplanetary drives revolutionize transportation, and telecommunications link not just the continents but planets.

PL 8: Energy Age

Civilizations begin to miniaturize induction engines, allowing anyone to carry a limitless power supply. This paves the way for the development of personal force fields, practical one-person Starfighters, and city-sized space stations.

PL 9 and Higher

Few civilizations advance beyond the Energy Age, and those that do are generally isolated worlds or species as yet undiscovered. At this stage of development, scientists rewrite the laws of physics, manipulating matter at the subatomic level, traveling through time, and adjusting space itself to literally shorten distances traveled rather than the time taken to travel those distances.

Universal Weapon Gadgets

The following gadgets are universal and can apply to weapons found in any era, provided all gadget-specific restrictions are met.

Automated

Any ranged weapon that must be mounted on a tripod or similar hard point can be automated. An automated weapon attacks any target that enters a 10-by-10-foot area specified by the person who sets up the weapon. The weapon targets visually, so it cannot attack targets it cannot see. (For targets using Stealth, assume the weapon has a Perception of +0.) This gadget can be selected multiple times for crew-served weapons, each time replacing one crewmember.

Restrictions: Mounted ranged weapons only.

Price: +800 GPE

Concealable

Some weapons can be installed (or operated from) inside other items; for example, guns that fit into briefcases, grenades disguised as cosmetic products, and so forth. The concealed item cannot be identified as a weapon except through close examination, or when it is in use. The concealed weapon cannot be larger than the item in which it is concealed.

Restrictions: None

Price: 200 GPE

Electrified

The weapon is attached to a power source. On a successful hit, the target takes 1d6 points of electricity damage as well as the damage dealt by the weapon. Ranged weapons are not affected by this gadget. This bonus damage stacks with magic weapon special abilities such as Shocking.

The power source has 5 uses, after of which it must be recharged with a battery.

Restrictions: Metal melee weapons only.

Price: 1,500 GPE

Extended Range

The range of the weapon is doubled. Melee weapons are not affected by this gadget.

Restrictions: Firearms only.

Price: 600 GPE

Grappling Sheath

Grenades and mines can be fitted with custom grappling sheaths designed to adhere to any surface against which they are thrown or placed. This gadget ensures that grenades deviate much smaller distances, and emplaced bombs cannot be easily removed.

When throwing a grenade equipped with a grappling sheath, it cannot fall short on a miss. Once placed, a mine or other explosive with a grappling sheath cannot be moved, short of tearing it loose. Doing so requires a DC 20 Strength check, and depending on the mine's trigger, might cause it to detonate.

Restrictions: Grenades and Mines only.

Price: +250 GPE

Improved Accuracy

Through rifling, rangefinding, and microcomputer targeting, this gadget improves the accuracy of a ranged firearm granting a +1 competence bonus on attack rolls. This gadget can be selected multiple times up to a +5 competence bonus.

Restrictions: Ranged weapons only.

Price: 200 GPE

Improved Damage

This gadget increases the bore of a projectile weapon's barrels or improves the output of an energy weapon, increasing the damage dice of the ranged weapon by one step. This does not stack with Gravity Bow or similar damage die increasing effects.

Restrictions: Ranged weapons only.

Price: 8,000 GPE

Improved Stopping Power

Incorporating modified chokes and reducing the impedance of focusing crystals allows ranged weapons to produce significantly greater damage output. This gadget increases the damage dice of the ranged weapon by one step. This stacks with Improved Damage, but not Gravity Bow or similar damage die increasing effects.

Restrictions: Ranged weapons only.

Price: 32,000 GPE

Motion Sensitive

Motion-sensitive weaponry attacks any target moving faster than 5 feet per round. The weapon's user chooses a 10-foot-by-10-foot area for the weapon to cover; any eligible target in the area causes the weapon to attack.

Restrictions: Grenades, mines, or automated ranged weapons only.

Price: 1,000 GPE

Plastic

The weapon is made with high-impact plastic parts, rather than metal. It does not register to metal detection scans (though it does register to x-rays). The weapon has a hardness of 2 and half its normal hit points.

Restrictions: None

Price: 100 GPE

Reduced Weight

The weight of the weapon is reduced by 25%.

Restrictions: None

Price: 250 GPE

Sound-Activated

Sound-activated weaponry attacks any target that makes noise. The weapon's user chooses a 10-foot-by-10-foot area for the weapon to cover; any eligible targets in the area cause the weapon to attack. The weapon targets via audio, so it cannot attack targets that it does not hear. (For targets using Stealth, assume the weapon has a Perception modifier of +0.)

Restrictions: Grenades, mines, or automated ranged weapons only.

Price: 1,000 GPE

Thermal Targeting

Weaponry equipped with thermal targeting systems homes in on any target that produces heat in a certain temperature range, specified by the weapon's user. Attacks made with the weapon gain a +2 circumstance bonus against targets in that temperature range, but take a -4 penalty against targets in other temperature ranges. Resetting the temperature range is a full-round action.

Temperature Range	Sample Targets
Low	Medium reptiles, Small mammals, Tiny robots
Average	Large reptiles, Medium mammals (including most humanoid races), Small robots, lanterns, candles
Above Average	Huge reptiles, Large mammals, Medium robots or vehicles, torches, campfires, hot oven, electric vehicle
High	Gargantuan reptiles, Huge mammals, Large robots or vehicles
Very High	Colossal reptiles, Gargantuan mammals, Huge robots or vehicles, bonfires, furnaces
Extremely High	Colossal mammals, Gargantuan robots or vehicles, lava, lasers

Restrictions: Grenades, mines, or automated ranged weapons only.

Price: 2,500 GPE

Voice-Activated

Voice-activated weaponry allows the wielder to switch between firing modes (including activating or deactivating the safety) as a free action; even without the use of one's hands, and including when the weapon is out of one's hands. A voice recognition chip can be installed (at an additional cost) to ensure that only the weapon's registered owner can issue commands to the weapon.

Restrictions: Ranged weapons only.

Price: 1,000 GPE (4,000 GPE with voice recognition chop).

Universal Weapon Flaws

The following flaws are universal and can apply to weapons found in any era, provided all flaw-specific restrictions are observed. These subtract from the price of items.

Decreased Range

The range of the weapon is halved. Melee weapons are not affected by this flaw.

Restrictions: Ranged weapons only.

Price: -500 GPE

Disposable

The weapon is designed to be used once, then thrown away. It cannot be reloaded.

Restriction: Ranged weapons only.

Price: -500 GPE

Unneeded Size

The size of the weapon is increased by one category (from Small to Medium, for example). The character wielding the weapon still uses the original size category for damage. This affects weight, and any penalties a creature may take for wielding an oversized weapon.

Restrictions: None

Price: -700 GPE

Unneeded Weight

The weight of a weapon is increased by 50%. This stacks with Unneeded Size.

Restrictions: None

Price: -700 GPE

Reduced Accuracy

With the sights filed off, the barrel shortened, or the focusing crystals misaligned, ranged weapons are considerably less accurate. This flaw decreases the accuracy of a ranged firearm, conferring a -1 penalty on attack rolls. This flaw can be selected for the same weapon multiple times up to a -5 penalty on attack rolls.

Restrictions: Ranged weapons only.

Price: -200 GPE

Reduced Damage

Consisting of a modified barrel bore or an inferior voltage regulator, this flaw reduces the damage dice of the weapon by one step (1d8 -> 1d6).

Restrictions: Ranged weapons only.

Price: -1,000 GPE

Reduced Stopping Power

Increasing the choke on projectile weapons and the impedance of focusing crystals cases ranged weapons to produce much lower damage outputs. This flaw subtracts 1 die from the weapon's damage (decreasing damage from 2d8 to 1d8 for example). This flaw cannot be applied to a weapon that only deals a single point of damage. A single die of damage gets reduced to 1 point of damage.

Restrictions: Ranged weapons only.

Price: -4,000 GPE

Universal Ammunition Gadgets

The following gadgets are universal and can apply to ammunition found in any era, provided all gadget-specific restrictions are observed.

Chemical, Muscle Relaxant

Rather than a solid slug, the projectile is an injector dart designed to deliver a dose of broad-range muscle relaxants. The projectile has half the normal range increment for the weapon and deals only 1d3 points of damage. If this penetrates the target's DR, the dart injects the target with muscle relaxant dealing 1d4+1 points of Dexterity damage. The target can make a DC 14 Fortitude save to reduce the damage by half.

Restriction: Ballistic weapons and ammunition only.

Price: 600 GPE

Extended Range

The range of a ranged weapon is doubled. Melee weapons are not affected by this gadget.

Restriction: Ranged weapons only.

Price: 800 GPE

Flechette

Flechette rounds fire bundles of razor-sharp fin-stabilized tungsten darts. A weapon that fires this ammunition doubles its critical threat range, but takes a -1 penalty on all attack rolls. This does not stack with similar critical threat range enhancements.

Restrictions: Projectile weapons only.

Price: 1,000 GPE

Improved Damage

Projectile ammunition with custom loads of energy weapons with dispersion crystals improve the damage of the weapon by +1. This can be taken up two three times for a +3 bonus to damage.

Restrictions: Ranged weapons only.

Price: 400 GPE

Improved Penetration

Utilizing high-frequency energy bursts, shots from this weapon reduce the effectiveness of armor. When fired at an opponent wearing any type of armor, the attack receives a +2 bonus. It has no benefit against targets that are not wearing armor.

Restriction: Ranged energy weapons only.

Price: 750 GPE

Improved Stopping Power

By employing hollow-point ammunition or diffusion crystals, this gadget allows ranged weapons to produce significantly greater damage output. This gadget adds 1 die to the weapon's damage (increasing damage from 2d8 to 3d8, for example).

Restrictions: Ranged weapons only.

Price: 12,000 GPE

Reduced Ammo Size

Advances in ammunition propulsion and power output enable standard-sized clips to hold more ammo. This gadget increases the number of rounds or shots in a clip by 50%.

Restrictions: Ranged weapons only.

Price: 800 GPE

Universal Ammunition Flaws

The following flaws are universal and can apply to ammunition found in any era, provided all flaw-specific restrictions are observed.

Birdshot

This is a lighter type of shotgun ammunition. It reduces the damage dealt by a shotgun by 1 die.

Restrictions: Shotguns only.

Price: -200 GPE

Diffusing

Energy weapons with low-frequency modifications result in reduced penetration. Damage from the weapon is reduced by -2.

Restrictions: Ranged energy weapons only.

Price: -200 GPE

Universal Armor Gadgets

The following gadgets are universal and can apply to armors found in any era, provided all gadget-specific restrictions are observed.

Concussive Plating

Concussive plating blunts the force of incoming physical damage by instantly generating a small, controlled explosion at the point of impact. This gadget provides DR 2 vs ballistic damage (piercing/bludgeoning).

Restrictions: Medium, heavy, or powered armor only.

Price: 1,000 GPE

Improved Defense

Incorporating puncture- and energy-resistant weave, armor with improved defense gains a +1 enchantment bonus to Armor Class. This gadget does not stack with magic armor enchantment bonuses.

Restrictions: None

Price: 1,000 GPE

Increased Range of Motion

Advances in armor articulation grant the wearer a bit more flexibility, increasing the armor's maximum dexterity bonus by +1.

Restrictions: None

Price: 1,000 GPE

Reduced Weight

The weight of the armor is reduced by 25%.

Restrictions: None

Price: 500 GPE

Segmented

Armor segmentation allows armor to move with the wearer, rather than the wearer learning to move with the armor. This benefit reduces the wearer's armor penalty by 1. This gadget can be selected for the same armor twice.

Restrictions: None

Price: 500 GPE

Voice-Activated

Voice-activated armor allows the wearer to activate various functions of the armor (such as an environment seal, integrated equipment, and so on) as a free action, even without the use of one's hands, and even when the armor is out of one's hands. A voice-recognition chip can be installed (at an additional cost) to ensure that only the armor's registered owner can issue commands to it.

Restrictions: Powered armor only.

Price: 1,000 GPE (4,000 GPE with voice recognition chop).

Universal Armor Flaws

The following flaws are universal and can apply to armors found in any era, provided all flaw-specific restrictions are observed.

Ablative

The armor is made from inferior materials. For every 10 points of damage the wearer takes, the armor's AC is reduced by 1 up to a -5 to AC.

Restrictions: None

Price: -1,000 GPE

Increased Weight

The weight of the armor is increased by 50%.

Restrictions: None

Price: -400 GPE

Reduced Defense

Armor with reduced defense takes a -1 penalty to AC, to a minimum of the armor's AC being +1. This flaw can be selected for the same armor multiple times.

Restrictions: None

Price: -400 GPE

Reduced Range of Motion

The armor lacks in even standard flexibility, decreasing the armor's maximum Dexterity bonus by -1. This flaw can be selected for the same armor multiple times to a maximum of a 0 maximum Dexterity bonus.

Restriction: None

Price: -400 GPE

Rigid

A virtually complete lack of armor segmentation makes the armor not only uncomfortable to wear, but difficult to move in. This disadvantage increases the wearer's armor check penalty by +1. This flaw can be selected multiple times to a maximum of a +5 to the wearer's armor check penalty.

Restrictions: None

Price: -400 GPE

Universal Equipment Gadgets

The following gadgets are universal and can apply to equipment found in any era, provided all gadget-specific restrictions are observed.

Concealable

Some items can be installed (and operated from) inside of other items, for example, communicators that fit into hollowed-out false teeth, a flash-seal that looks like a personal music storage device, and so forth. The item cannot be properly identified except through close examination, or when it is in use. The item cannot be larger than the item in which it is to be concealed.

Restrictions: None

Price: 600 GPE

Durable

The hit point total of the equipment is increased by 50% of the original total. This gadget can be selected multiple times, each time increasing the hit point total of the equipment by 50% of the original total. This can be done up to 5 times.

Restrictions: None

Price: 500 GPE

Reduced Size

The size of the equipment is reduced by one category (from Large to Medium, for example).

Restriction: None

Price: 500 GPE

Reduced Weight

The weight of the equipment is reduced by 25%.

Restrictions: None

Price: 500 GPE

Tough

The hardness of the equipment is increased by +2. This gadget can be selected multiple times up to a 10 Hardness.

Restrictions: None

Price: 250 GPE

Universal Equipment Flaws

The following flaws are universal and can apply to equipment found in any era, provided all flaw-specific restrictions are observed.

Flimsy

The hardness of the equipment is decreased by -2, to a minimum of 0. This flaw can be selected multiple times.

Restrictions: None

Price: -100 GPE

Fragile

The hit point total of the equipment is decreased by 25% of the original total. This flaw can be selected up to four times, each time decreasing the hit point total of the equipment by 25% of the original total.

Restrictions: None.

Price: -350 GPE

Increased Size

The size of the equipment is increased by one category (from Small to Medium, for example).

Restrictions: None

Price: -400 GPE

Increased Weight

The weight of the equipment is increased by 50%.

Restrictions: None

Price: -400 GPE

Universal Computer Gadgets

The following gadgets are universal and can apply to computers found in any era, provided all gadget-specific restrictions are observed.

Durable

The hit point total of the computer is increased by 50% of the original total. The gadget can be selected multiple times, each time increasing the hit total of the computer by 50% of the original total.

Restrictions: None

Price: 500 GPE

Improved Database

The computer's files contain an up-to-date, cross-referenced information database on a wide range of common and uncommon subjects, granting a +2 enchantment bonus on Use Computers checks made with a computer.

Restrictions: None

Price: 350 GPE

Reduced Size

The size of the computer is reduced by one category (from Large to Medium, for example).

Restriction: None

Price: 500 GPE

Reduced Weight

The weight of the computer is reduced by 25%.

Restrictions: None

Price: 500 GPE

Tough

The hardness of the computer is increased by +2. This gadget can be selected multiple times up to a 10 Hardness.

Restrictions: None

Price: 250 GPE

Universal Computer Flaws

The following flaws are universal and can apply to computer equipment found in any era, provided all flaw-specific restrictions are observed.

Flimsy

The hardness of the computer is decreased by -2, to a minimum of 0. This flaw can be selected multiple times.

Restrictions: None

Price: -100 GPE

Fragile

The hit point total of the computer is decreased by 25% of the original total. This flaw can be selected up to four times, each time decreasing the hit point total of the computer by 25% of the original total.

Restrictions: None.

Price: -350 GPE

Increased Size

The size of the computer is increased by one category (from Small to Medium, for example).

Restrictions: None

Price: -400 GPE

Increased Weight

The weight of the computer is increased by 50%.

Restrictions: None

Price: -400 GPE

Progress Level 6 Gear

The Fusion Age mainly advances technology by improving upon the advances of the Information Age. The overall design philosophy is to reduce the size and weight of the equipment or to improve its efficiency – in terms of damage, or energy output, or what-have-you – without significantly increasing its existing specs.

Fusion Age Weapons

The following weapons are available at PL 6 and higher.

Types: B = Bludgeoning, P = Piercing, S = Slashing, So = Sonic

Rate of Fire: S = Single, A = Automatic

Ranged Weapons

Price	Name	Damage	Critical	Type	Range	RoF	Mag	Weight
500 GPE	Charge Pistol	2d8	x2	B, P	60 ft	S, A	30 box	2 lbs
1,500 GPE	Charge Rifle	2d10	x3	B, P	150 ft	S, A	50 box	14 lbs
1,000 GPE	Compression Gun	2d10[1]	x2	So	10 ft	S	Special[1]	9 lbs
1,200 GPE	Falcon .55	2d8	x3	B, P	40 ft	S, A	16 box	2 lbs
800 GPE	Flechette Pistol	2d6	x2	P, S	40 ft[1]	S, A	30 box	2 lbs
1,600 GPE	Flechette Rifle	2d8	x3	P, S	80 ft	S, A	50 box	12 lbs
900 GPE	Gyrojet Pistol	2d6	x2	B, P	60 ft	S	8 box	2 lbs
1,400 GPE	Gyrojet Rifle	2d6	x2	B, P	140 ft	S	15 box	15 lbs
400 GPE	Sleep Pistol	Special	--	--	Special	S	6 int.	2 lbs

1 See the weapon description for details.

Charge Pistol

Charge Weapons replace gunpowder and other chemical explosives with electrochemical propellant, ignited with a short but massive shock to the cartridge (rather than the old-fashioned firing pin). The propellant converts to white-hot plasma with a smoother, more powerful expansion than gunpowder, resulting in a slug with a considerably higher muzzle velocity. The recoil is slightly greater than with gunpowder, though not enough to significantly affect the user's aim.

Charge Rifle

The charge rifle is a larger version of the charge pistol, with better range, increased firepower, and of course, a full-automatic mode.

Compression Gun

Named for the method by which it acquires a charge, a compression gun releases a short-range concussive burst of sonic energy. The damage is nonlethal, but the shock to the system can drop the target in her tracks. Compression guns resemble sawed-off shotguns, with either a pump-action lever on a hand crank for generating a charge. A compression gun carries no ammunition, fires only one shot at a time, and requires a move action to recharge.

Falcon .55

With the increasing popularity of a civilian model of the Falcon .45, law enforcement needed a better sidearm. In PL 6 the new service pistol is simply a higher-caliber version of the old reliable pistol, with the same tremendous stopping power and autofire mode in a lightweight frame.

Flechette Pistol

Flechette weapons fire bundles of tiny razor-sharp aerofoils. The bundles expand upon exiting the barrel, maximizing the damage area (though the aerofoils lack real penetrating power). The majority of damage is due to blood loss and nerve and muscle damage, rather than serious internal injuries. The aerofoils also lose momentum more quickly than a standard slug, the damage is halved at greater than 2 range increments.

Flechette Rifle

The larger version of the flechette pistol, the flechette rifle boasts improved range and a slightly larger aerofoil bundle, as well as an autofire setting, perfect for clearing rooms full of opponents without seriously damaging the room itself.

Gyrojet Pistol

Gyrojet weapons fire miniature self-propelled rockets rather than solid slug projectiles. Though somewhat heavier than standard ammunition, gyrojet ammo has the advantage of being slightly more accurate, while the weapons themselves are ligher and don't require any sort of power source.

Gyrojet Rifle

The larger version of the gyrojet pistol, the gyrojet rifle has a greater range and a larger clip capacity, but it is otherwise basically the same.

Sleep Pistol

Sleep pistols fire spheres of frozen somnall designed to render rioters unconscious without dealing damage. The pistol fires the Somnall sphere 40 feet, where it explodes, scattering the drug as a fine mist over a 5-foot square. Any living creature in the affected square must make a DC 15 Fortitude save to avoid falling instantly unconscious. Unconsciousness lasts for 2d4 rounds. The sleep pistol can be adjusted to fire the Somnall from 20 feet to 60 feet; resetting the detonation distance is a full-round action.

Melee Weapons

Price	Name	Damage	Critical	Type	Range	Weight	Special
2,000 GPE	Chain Sword	2d8	19-20/x3	S	-	4 lbs	Distracting
500 GPE	Ketch-all pole, electric	1d4[1]	x2	B	-	8 lbs	Electric Attack, Reach

Chainsword

Three feet of tungsten steel with a molecule-thin razor chain of hardened synthetic crystals, the chainsword is a particularly lethal melee weapon (and so brutal that even some military forces are uncomfortable using them). The razor chain whirls chainsaw-style, powered by a microbattery pack that can keep the weapon running for up to 20 minutes (200 rounds) of use. Replacement battery packs cost 20 GPE. Replacing the battery pack requires a move action.

The buzzing of a chainsword's blade is loud and distracting (but not deafening), causing anyone carrying an activated chainsword to take a -10 penalty on Stealth checks. An activated chainsword grants a proficient user a +2 morale bonus on Intimidate checks.

Ketch-All Pole, Electric

An electrified version of the venerable ketch-all pole, this version not only restrains the target, but takes most of the fight out of her as well. A wielder who hits an opponent with a ketch-all pole (electrical or nonelectrical) can immediately initiate a grapple (as a free action) without provoking an attack of opportunity. In addition to the normal options available to a grappler, the wielder of a ketch-all pole can attempt to pull his target to the ground (the equivalent of a trip attack, though no attack roll is necessary).

Alternatively the wielder of a ketch-all pole can trigger a shock to the target as an attack action. This shock deals 4d6 points of electricity damage (Fortitude DC 16 half). The ketch-all pole has reach and takes a -4 against adjacent opponents. A ketch-all pole can be used only against opponents within one size category of the wielder.

Ammunition Types

Price	Ammunition	Quantity	Special
200 GPE	Distraction Round	1	Small Noise (DC 13)
500 GPE	Jammer Round	1	Jam (3 rounds)
350 GPE	Microphone Round	1	Special[1]
700 GPE	Surveillance Round	1	Special[1]

1 See text

Distraction Round

A heavy-duty dart with a sound chip and tiny speaker attached, a distraction round deals no damage. Instead, it sticks in a solid surface and begins emitting a random series of small noises – quiet breathing, small coughs, creaking leather, the sound of scraping feet, and so on. These noises are just loud enough to attract the attention of a sentry (Perception DC 13), potentially providing a distraction.

Jammer Round

A subsonic slug outfitted with a tiny transmitter, the jammer round disrupts electronic devices without destroying them or affecting nearby devices. The jammer round need only be fired into the same 5-foot square as the target device (an effective AC of 10). Any device in the target square becomes nonfunctional for 3 rounds.

Microphone Round

Microphone rounds are subsonic slugs fitted with miniature microphones and microtransmitters. The round can be fired into any solid object. Once affixed, it transmits sound to a receiver unit (such as headphones) located within 100 feet of the transmitter. The round picks up and transmits sound to the listener as though the listener were standing at the impact point.

Surveillance Round

Surveillance rounds are subsonic slugs fitted with miniature cameras and microtransmitters. The round can be fired into any solid object. One affixed, it transmits its view to a monitor designed to receive the round's signal (see Surveillance Round Receiver on page). The round's field of vision is only 90 degrees and is centered on the line from the firing point to the impact point. The field of vision cannot be changed, and the surveillance round does not pick up audio.

Explosives and Splash Weapons

Price	Name	Damage	Critical	Type	Radius	Range	Weight
	Grenade, Midnighter	Special[1]	x2		10 ft	10 ft	1 lbs
	Grenade, Sleep	Special[1]	x2		20 ft	10 ft	1 lbs
	Grenade, Superadhesive	Special[1]	x2		- ft	10 ft	2 lbs
	Grenade, Superlube	Special[1]	x2		5 ft	10 ft	2 lbs

1 See the weapon description for special details

Grenade, Midnighter

Midnighter grenades release light-absorbing smoke that doesn't just obscure vision – the smoke creates a field of darkness with a 10-foot radius. Only creatures with darkvision can see in an area shrouded in midnighter smoke. Normal lights (flashlights, candles, lanterns, and so forth) do not illuminate the darkened area. Night vision goggles are equally ineffective. Only blackout goggles, darkvision, and magical sources of light can penetrate the inky darkness.

Grenade, Sleep

Sleep grenades carry a payload of frozen somnall, a pharmaceutical barbiturate normally used to sedate patients, but in this dosage it is a potent riot-control measure. When the grenade explodes, it scatters the drug as a fine mist over a 20-foot radius; any living creature in the radius must make a DC 18 Fortitude save to avoid falling instantly unconscious. Unconsciousness lasts for 2d4 rounds.

Grenade, Superadhesive

Superadhesive is an adhesive resin that expands rapidly and hardens almost instantly in contact with air. Its primary use is a nonlethal crowd-control option, but some of its earliest actual use in the field yielded surprising uses- notably as an instant, temporary barricade.

The superadhesive generated by the grenade fills a 5-foot square, creating a barrier nearly as solid as a concrete wall. The hardened superadhesive has a hardness of 8 and 60 hit points, with a break DC of 20. Anyone caught in the square can attempt to break out with a Strength check, or he can await to be rescued by someone who deals damage to the hardened foam from outside.

The foam gradually becomes brittle enough to break more easily (losing 1 point of hardness every 10 minutes).

Armor

Price	Name	Type	AC Bonus	ACP	Max Dex	Weight	Speed	Arcane Spell Failure Chance
880 GPE	Stun Shield	Shield	+2	-2	-	15 lbs	-	10%

Stun Shield

Stun shields were developed as another nonlethal crowd-control measure: a shield that protects the wielder and temporarily incapacitates attackers. In addition to the shield bonus it grants, the shield emits a pulse of stunning energy when struck by an unarmed attacker in melee combat. The attacker must succeed on a DC 13 Fortitude save or be stunned for 1d4 rounds.

Fusion Age Weapon Gadgets

The following gadgets are found in the Fusion Age and can apply to weapons of that era or later, provided all gadget-specific restrictions are observed.

Laser Bayonet

Laser bayonets are not actually bayonets, but they serve the same general purpose. Mounted on longarms (usually assault rifles), the laser bayonet triggers when the wielder strikes an opponent with the weapon itself as a melee attack (taking the usual -4 penalty for attacking with an improvised weapon). The Laser Bayonet triggers, dealing 1d8 points of fire and electricity damage in place of the weapon's normal damage dealt.

Restrictions: Longarms only.

Price: 1,000 GPE

Fusion Age Armor Gadgets

The following gadgets are found in the Fusion Age and can apply to armors of that era or later, provided all gadget-specific restrictions are observed.

Armorflex

Armorflex is a treatment applied to armor materials that reacts to variations in electrical current, rendering the armor either soft and pliable, or hard and rigid. As a move action, the wearer can adjust the armor's AC bonus, at the same time altering the armor's maximum Dexterity bonus and armor check penalty. The baseline maximum AC bonus is the armor's normal bonus; dialing this down by 1 increases the maximum Dexterity bonus by 1, and reduces armor check penalty by 1, to a minimum of 0 in either the AC bonus or the armor check penalty. (Once one of these numbers reach 0, the armor cannot be adjusted any lower. There is no upper limit on the maximum Dexterity bonus, however.)

Restrictions: None

Price: 4,000 GPE

Fusion Age Equipment

The following equipment is available at PL 6 and higher.

Name	Weight	Price
Chemical and Medical Equipment		
Chemical, Equalize	-	300 GPE
Chemical, Prolong	-	800 GPE
Chemical, Refresh	-	450 GPE
Chemical, Rejuve	-	600 GPE
Chemical, Revivall	-	700 GPE
Health-Alert	-	650 GPE
Hydrate	-	150 GPE
Computer Equipment		
System Smoker	5 lbs	1,100 GPE
Wrist-Comp	2 lbs	3,000 GPE
Miscellaneous Equipment		
Blackout Goggles	2 lbs	2,400 GPE
Jumper Pack	35 lbs	1,500 GPE
Microtorch	1 lbs	990 GPE
Nausea Wand	3 lbs	600 GPE
Piercing Panel	2 lbs	1,000 GPE
Superlube Sprayer	48 lbs	1,400 GPE
Wallcrawler Gear	2 lbs	720 GPE

Blackout Goggles

Blackout goggles are the PL 6 equivalent of night vision goggles – more effective against standard darkness and the only means of seeing through the smoke generated by midnighter grenades. The wearer gains darkvision 120 feet, and the goggles do not require even a little light to operate. In supernatural darkness, the blackout goggles enable the wearer to see up to 20 feet, though only in black-and-white.

Chemical, Equalize

Developed for the military, equalize stabilizes the subject's body heat to compensate partially for external temperatures, granting the subject a +2 circumstance bonus on Fortitude saves to resist hot or cold weather. A single dose lasts for 4 hours.

Chemical, Prolong

Another military development, prolong enables the subject to continue acting after reaching -1 hit points, as though the subject had the Diehard feat. Prolong's effects last for 30 minutes. It must be administered before the subject reaches -1 hit points.

Chemical, Refresh

Refresh began as a military experiment, but quickly became a popular pharmaceutical for athletes. Refresh removes the exhausted condition from the subject, rendering them merely fatigued. A dose lasts for 1 hour; when it wears off, the subject is exhausted for 4 hours (during which time an addition dose of refresh is ineffective).

Chemical, Rejuve

Rejuve enables the subject to recover twice as fast as normal. He recovers 2 hit points per character level per evening of rest, 2 points of temporary ability damage per evening of rest, and awakens in half the normal time after being knocked unconscious. Rejuve lasts for the day until the character has rested.

Chemical, Revivall

Revivall restores an unconscious subject to 1 hit point. It is often used in conjunction with Prolong, though it is advisable only for the purpose of stabilizing a subject and making him ambulatory.

Health-Alert

Health-Alert bracelets (and later, subcutaneous microchips) monitor the subject's vital signs, providing constant, real-time data on her health- like a 24 hour-a-day medical checkup. The Health-Alert identifies loss of hit points, ability damage, and the conditions dazed, disabled, dying, exhausted, fatigued, helpless, paralyzed, stunned, unconscious, and by default stable. Because this information is displayed as a series of coded readouts, it requires a DC 5 Heal check to correctly interpret the data. A handheld diagnostic computer, commonly included in first aid and medikits in PL 6, displays the information in plain language when it is touched to the bracelet (or the area where the microchip is implanted).

The real utility of the Health-Alert is that it transmits its data to paramedic facilities, alerting them if the subject's vital signs are low (such as when suffering from adverse conditions). The paramedics can then contact the subject (in the case of low-danger situations, such as the fatigue or exhausted conditions), or to dispatch a team to administer emergency aid (as in the case with disabled or paralyzed subjects). Response time is generally from 1d4+2 minutes in heavily populated areas (such as cities), 2d4+10 minutes in areas of average population (such as small towns), or 2d20+20 minutes in sparely populated areas (such as in the country). Service in wilderness areas is nonexistent.

The Health-Alert's frequency can be altered with a DC 25 Computer Use check.

Hydrate

Hydrate is a commercially available chemical compound that provides the same benefit as an 8-hour supply of water- all in pill form. Using more than two capsules a day for more than three days results in acute kidney damage (1d4 Constitution damage each day until use is discontinued).

Jumper Pack

A jumper pack is a bulky backpack that allows the wearer to fly for short distances. Less versatile (and thus less popular) than the jetpack, the jumper pack derives its name from the fact that it can carry the wearer a maximum of 250 feet before its premeasured fuel mixture runs out, forcing the wearer to land; this results in a kind of sustained jumping movement. A character equipped with a jumper pack can fly at a speed of 50 feet (poor maneuverability). Each jumper pack carries enough fuel for 10 jumps; replacement fuel cells have a price of 300 GPE.

Microtorch

The microtorch, which is no larger than a flashlight, is a handheld arc welder and cutting torch combination. It is commonly used by rescue services, service workers, and military engineer units. In addition to making sturdy welds, the microtorch can burn through steel. A microtorch deals 1d12 points of fire damage, and bypasses hardness. Obviously a microtorch can be used as a weapon as well; the wielder must make a melee touch attack to deal damage with it.

Nausea Wand

The nausea wand employs short-range subsonic waves to cause a systemic reaction in the target's body, producing sudden, devastating nausea. The wielder makes a melee touch attack to trigger the effect. Targets who fail a DC 15 Fortitude save are nauseated for 1d4+1 rounds.

Piercing Panel

The forerunner of the piercing visor, the piercing panel allows the wielder to see through any solid object against which the panel is pressed. Using a combination of sensors, the panel creates an accurate computer-rendered image of what lies on the other side of the object.

Placing and activating a piercing panel requires a full-round action. The panel can penetrate 3 inches of metal (except lead which it cannot penetrate at all), or 1 foot of other materials including concrete, wood, and plaster.

Wallcrawler Gear

Wallcrawler gear uses thousands of tiny suction cups and variable-grip adhesives implanted in soft boots and gloves to greatly improve the wearer's ability to cling to surfaces. Using wallcrawler gear grants a +4 circumstance bonus on climb checks. Using at least the gloves in combat grants the wearer a +4 circumstance bonus on grapple checks made to hold an opponent.

Traveler Science

This presents both realistic and fantastic options for traveling and living in space. You can use whichever suits you and your campaign best. Perhaps you like the drama of the journey from the Earth to the Moon; perhaps all you really care about is how long it takes to get there. This section can help you with both.

Realistic Space Travel

When speaking of space travel, it is important to distinguish interplanetary travel from interstellar travel. Travel between planets is within the grasp of modern technology and is likely to become easier as science develops new fuel sources or new ways to maximize existing fuel sources. Travel between stars, on the other hand, calls for some truly radical leaps in a number of different fields.

Hazards of Space Travel

Space travel is nowhere near as easy as books and movies make it seem. Foreign objects are a constant danger, even a micrometeoroid traveling at a high enough velocity can punch a hole through a starship's hull and expose the entire crew to the vacuum of space. Ionizing radiation also poses a serious threat. Finally, characters must adapt to the weightlessness of space or suffer the effects of space adaption syndrome (SAS), referred to colloquially as "space sickness."

Meteoroids

Meteoroids are small rocks that travel through space at a speed of 7 miles per second. They can be as small as a grain of sand or as big as a mountain. Although they generally burn up in a planet's atmosphere before reaching the ground, meteoroids in space aren't likely to suffer such a fate. Instead, they slam into other objects, including starships and space stations, like volleys of rifle or artillery fire.

Unarmored starships and space stations can easily survive impacts from the smaller meteoroids, but larger ones can punch lethal holes in such fragile vessels. Fortunately large meteoroids are rare and easier to detect before they can get too close to cause any real damage.

The GM can roll on the table below to determine whether a meteoroid threatens a given ship or space station. Each roll represents one 24-hour period. If the result indicates a meteoroid encounter, the GM should set the encounter at some random point in the day.

Meteoroid Size: The size of the meteoroid.
Collision Damage: When a meteoroid collides with a starship, space station, or other object, both the meteoroid and the object it strikes take damage.
Computer Use Check DC: A starship or space station equipped with a sensor system can detect an incoming meteoroid; doing so requires a successful Computer Use check. A starship or space station cannot attempt to avoid or destroy a meteoroid it fails to detect.

Pilot Check DC: Avoiding a meteoroid requires a successful Pilot check. Only starships or space stations that move are capable of avoiding meteoroids.
AC: The meteoroids' Armor Class.
Hardness: The meteoroid's hardness.
Hit Points: The meteoroid's total hit points.

d% Roll	Meteoroid Size	Collision Damage	Computer Use DC	Pilot DC	AC	Hardness	Hit Points
1-75	No meteoroid	-	-	-	-	-	-
76-80	Diminutive	1d6	35	5	14	2	15
81-85	Tiny	2d6	30	10	12	2	30
86-88	Small	3d6	25	15	11	4	90
89-91	Medium	4d6	20	20	10	4	225
92-94	Large	4d8	15	25	9	6	1,125
95-97	Huge	6d8	10	30	8	6	4,500
98-99	Gargantuan	8d10	5	35	6	8	9,000
100	Colossal	5d100	0	40	4	8	36,000

Vacuum Exposure

Beings exposed to the airless cold of space are not immediately doomed. Contrary to popular belief, characters exposed to vacuum do not immediately freeze or explode, and their blood does not boil in their veins. While space is very cold, heat does not transfer away from a body that quickly. The real danger comes from suffocation and ionizing radiation.

Reentry

Anything that travels too fast into an atmosphere generates an enormous amount of friction, which produces tremendous heat. (Temperatures of 2,280 degrees Fahrenheit have been recorded.) Objects trying to enter a planetary atmosphere safely must shed velocity. However, decelerating consumes large amounts of fuel, and many ships (especially at Progress Level 5) simply don't have enough. As an alternative, scientists have developed ways to slow ships in reentry by using the atmosphere friction itself. Ablative shielding or ceramic tiles take care of any excess heat. Even so, entering a planet's atmosphere is a tricky business; the angle of entry is precise, and deviation either way causes the heat to build up too quickly for the heat shields to reflect away from the ship. Worse yet, during the most intense heating, the ship is surrounded by a thin layer of plasma that blocks radio signals, and the crew have no contact with ground control.

Entering planetary atmosphere safely requires a Pilot check (DC 20) each round for the 1d10+20 rounds it takes to slow the ship using friction alone. Success means that the ship takes only 3d6 points of fire damage each round. Failure means that the ship's angle is too law, and that it is not shedding velocity fast enough; the ship takes 6d6 points of fire damage each round until the pilot succeeds at the Pilot check to correct the angle of descent. If the check fails by 5 or more, the angle is too steep,

and the ship takes 10d6 points of fire damage each round until the pilot succeeds at the Pilot check to correct the angle. Each round spent at too low an angle does not count toward the number of rounds required to land the ship; the ship isn't making any downward progress. Conversely, each round spent at too steep an angle counts as 2 rounds, indicating that the ship is descending much faster than it should.

Interplanetary Travel

In Progress Level 5, humanity has the technology to send unmanned probes to the edge of the solar system. However, human sojourns into space are limited to orbital missions and trips to the Moon, as longer journeys would take decades and consume ridiculous amounts of fuel and oxygen.

Interplanetary travel becomes possible at Progress Level 6. Ships fitted with magnetic ram scoops allow the screw to manufacture fuel from particles of hydrogen gas floating loose into space (though at only a few atoms per cubic inch). Such a ship could even incorporate a particle accelerator that converts matter into antimatter – with far more efficient thrust-to-payload ratios than solid fuel. With a sufficient supply of food, water, and oxygen, a ship so equipped could travel to the edges of the solar system and perhaps to another solar system entirely.

Interstellar Travel

Realistically, the starships presented are capable only of interplanetary travel, not interstellar travel. The reason for this is simple: Even the best engine can't accelerate a ship to light speed, and without light speed, interstellar journeys take tens of thousands of years.

The speed of light is 186,000 miles per second. That's 1,116,000 miles per round, or 66,960,000 miles per hour. Maneuvering a ship at this speed is a tricky proposition; by the time you notice an object in your path, it's probably too late to avoid it. One must also consider relativity: the closer the ship's velocity comes to the speed of light, the greater it's mass. A starship cannot achieve light speed via simple acceleration, no matter how powerful the ship's engine, as increasing the power only increases the mass.

The greatest impediment to traveling between the stars is time: What would be the point of sending astronauts to Alpha Centauri for example, if by the time they arrived, no one on Earth could remember why they'd gone in the first place? Time dilation – the slowing of the passage of time in relation to an object traveling at close to the speed of light – becomes a factor. A few years might pass on board the ship, while a few hundred years might have passed both at the ship's point of origin and its point of arrival.

Distance	--Time to Destination--					
	PL 5 Engine	PL 6 Engine	PL 7 Engine	PL 8 Engine[1]	PL 9 Engine[2]	Light Speed
Earth to the Moon (240,000 mi.)	40 hrs.	8 hrs.	2 hrs.	1.96 min.	9.2 sec.	1.29 sec.
Earth to the Sun (1 AU) (93,000,000 mi.)	645.8 days	129.2 days	23.3 days	12.6 hrs.	59.3 min.	8.3 min.
Earth to Mercury (56,950,000 mi.)	395.5 days	79.1 days	19.8 days	7.7 hrs.	36.4 min.	5.1 min.
Earth to Venus (26,040,000 mi.)	180.8 days	36.2 days	9.04 days	3.5 hrs.	16.6 min.	2.33 min.
Earth to Mars (48,360,000 mi.)	335.8 days	67.2 days	16.8 days	6.6 hrs.	30.7 min.	4.3 min.
Earth to Jupiter (390,600,000 mi.)	7.43 years	1.49 years	135.6 days	2.2 days	4.2 hrs.	35 min.
Earth to Saturn (704,940,000 mi.)	13.4 years	2.68 years	244.8 days	4 days	7.5 hrs.	63.2 min.
Earth to Uranus (1,687,020,000 mi.)	32.1 years	6.42 years	1.6 years	9.5 days	18 hrs.	2.52 hrs.
Earth to Neptune (2,715,600,000 mi.)	51.67 years	10.33 years	2.58 years	15.4 days	1.2 days	4.1 min.
Earth to Pluto (3,574,920,000 mi.)	68.02 years	13.6 years	3.4 years	20.2 days	1.6 days	5.33 min.
1 Light Year (5,865,696,000,000 mi.)	111,600 years	22,320 years	5,580 years	91 years	7.14 years	1 year
Sun to Alpha Centauri (4.4 Light Years)	491,040 years	98,208 years	24,552 years	400 years	31.4 years	4.4 years

1: A PL 8 engine can achieve a speed of 2,046 miles per second (1.1% of the speed of light).

2: A PL 9 engine can achieve a speed of 26,040 miles per second (14% of the speed of light).

Realistic Travel Times

The table above provides various "realistic" interplanetary and interstellar travel times. These times assume that starships cannot achieve velocities anywhere near the speed of light, for reasons discussed under Interstellar Travel (see above). Using the table, a starship equipped with a PL 6 ion engine would take 67.2 days to travel from Earth to Mars, while the same ship equipped with a PL 7 induction engine would take 16.8 days.

The travel times listed above are based on average distance. Planets move closer together and further apart based on their relative orbits around the sun, and the travel time between worlds may increase or decrease accordingly.

Time Dilation

When approaches to within 90% of the speed of light, time slows down. Characters on board the ship would not notice, but if they were to make hourly reports back to their point of origin, those reports might arrive only once every hundred hours.

This creates an interesting paradox, in that if a character managed to travel at the speed of light to another star and back again, a newborn child he left behind would now be older than him – if the child hadn't died of old age some time ago.

The actual amount of time dilation observed aboard a ship traveling near light speed increases in proportion to just how close it is to light speed. Technically, time dilation occurs at any speed, but it only becomes noticeable at relativistic speeds. The dilation is a ratio that determines how much time passes aboard the ship; it is a multiplier when determining how much time passes outside the ship.

For example, a ship moving at 70% the speed of light has a time dilation of 1.4. Ten hours of travel aboard the ship at this speed means that 14 hours (10 x 1.4) have passed outside the ship. However, if ten hours pass for those left behind, only 7.1 hours have passed aboard the ship (10 / 1.4).

Speed	AU per Hour	% Speed of Light	Time Dilation
2,046 mps.	0.18	1.1%	1.0003
26,040 mps.	1.0	14%	1.01
52,080 mps.	2.0	28%	1.04
78,120 mps.	3.0	42%	1.1
104,160 mps.	4.0	56%	1.2
130,200 mps.	5.0	70%	1.4
154,380 mps.	6.0	83%	1.8
167,400 mps.	6.5	90%	2.3
180,420 mps.	7.0	97%	3.9
182,466 mps.	7.1	98.1%	5.1
185,981 mps.	7.239	99.99%	60.2

Starship Speed: The vessel's speed in miles per second.
AU per Hour: The amount of Astronomical Units (AU) a vessel traveling at this speed can cross in 1 hour. One AU equal 93,000,000 miles (the distance between the Sun & Earth.)
% Speed of Light: The percentage of the speed of light (186,000 miles per second).
Time Dilation: Divide the time traveled by this number to arrive at the amount of time that passes on board the starship.

Jump Gate Technology

If a starship cannot reach the speed of light through sheer thrust, perhaps the answer lies in bending the laws of time and space so that the distance itself is shorter. A ship could then get around the need to travel at relativistic speeds, leaving behind the problem of increased mass and negating – if not actually reserving – the effects of time dilation. In other words, if one could find a shortcut through the galaxy, it might be possible for a spacecraft to travel quickly between star systems, and perhaps even travel backwards in time.

Shortcuts through space and time are called wormholes. Wormholes are created naturally when black holes collapse, though they tend to close rapidly that a ship attempting to pass through would instead encounter a singularity – a point with infinite density and a radius of zero – and be instantly crushed. But, if the technology were developed to enable a wormhole to remain open, it might become possible for spaceships to enter wormholes, travel for a few million miles, and emerge several light years away – perhaps at the point of a white hole.

White holes are theoretical objects that spew energy into the universe from unknown sources. One theory suggests that quasi-stellar objects (also known as quasars) are actually white holes, at the far end of which might be wormholes. Thus, it is theoretically possible to enter a wormhole in one location in the universe, and emerge from a white hole in another. Such a stable conduit could be called a jump gate. At Progress Level 5, the technology does not exist to stabilize wormholes in order to create jump gates, though by PL 6 scientists might have developed the technology to map the exist points of wormholes. With a theoretical advance in astrophysics, humanity might be ready to make the first safe jump by Progress Level 7.

Jump Gate (PL 7)

Jump gates consist of gigantic rings in space that use fusion reactors to generate a magnetic field capable of holding open a collapsing wormhole. This allows starships to enter the wormhole, engage their engines, and reduce the effective travel distance to the wormhole's exist point by a factor of 1,000. For example, the 48,360,000-mile trip from the Earth to Mars would be reduced to 48,360 miles via a jump gate (assuming a wormhole had appeared near the Earth and its exit point was near Mars). Thus, a starship with PL 6 ion engines traveling through "jump space" could reach Mars in approximately 1.6 hours (instead of 67.2 days) and completely avoid the effects of time dilation.

Jump gates do have a few limitations:

- Jump gates have only one exit point. Therefore, a jump gate from Pluto to Alpha Centauri is useless to characters who don't want to go to Alpha Centauri.
- Jump gates are one-way. The journey to the exit point might be comparatively short, but the journey back could take just as long as it always did – or require a circuitous route from jump gate to jump gate, some of which could be dozens of light years out of the way.
- Jump gates are rarely located near one another. A starship might have to cross an entire system to get from one exit point to the next jump gate.
- Maneuvering a jump gate into position requires a successful Use Computers check (DC 35). If this check fails by 5 or more, the jump gate collides with the closing wormhole and is crushed against the forming singularity.

In PL 7, jump gates are most likely owned by megacorporations that charge for their use. The toll varies according to the real distance between the jump gate and the exit point. GMs are encouraged to come up with their own prices for the jump gates depending on the megacorporation that owns the jump gate.

Price: 750,000 GPE (per jump gate)
License to Purchase: +5,000 GPE

Jump Network (PL 8)
As science develops ways to harness the power of singularities, astrophysicists apply the technology to wormholes. A jump network is a series of jump gates that can each serve as an entry or exit point. Thus, jump gates are no longer one-way: A jump gate can take a ship from the Earth to Mars and back. Further, the network could also include jump gates leading to and from Jupiter, Saturn, and Pluto.

Jump gates in the network are still expensive, but the risk of placing one has completely vanished; the jump gate merely has to be moved into the desired position – usually a Lagrange point – and switched on.

Many gates in the jump network are owned by megacorporations, who charge for their use. Some gates are operated by the military and have restricted access. However, the gates between common locations like planets and stars are government owned and designated for public use.

Price: 770,000 GPE (per jump gate)
License to Purchase: +5,000 GPE

Jump Drive (PL 9)

The jump drive is a portable version of a jump gate. Ships carrying a jump drive can create a stable, though temporary, wormhole. The artificial wormhole lasts until the ship that created it emerges from the exit point.

The jump drive suffers from one major limitation. Once a ship has entered jump space, it has only two real options: continue to the exit point, or deactivate the jump drive. The ship cannot change course while in jump space; it must drop out of jump space, set a new course, and re-engage the jump drive. The drawback to this is that jump drives require a lot of energy; recharging the drive takes hours, as shown on the table below.

Price: 2,500 GPE + ½ the price of the starship.

Starship Size	Jump Drive Recharge Time
Huge	8 hours
Gargantuan	2 hours
Colossal	1 hour

Fantastic Space Travel

A campaign needn't limit itself to relativistic speeds and time dilation. You can jump right into the "high adventure" side of space travel.

Faster-Than-Light (FTL) Drives

Early in Progress Level 7, the development of artificial gravity technology spawns the induction engine, and scientists quickly learn to apply the technology to faster-than-light travel. The early "stardrives" are not truly capable of reaching light speed but offer a vast improvement over conventional engines. Humanity can finally reach distant stars in mere weeks, advancing space exploration and colonization, as well as reaching out to contact and trade with intelligent alien life. The table below shows the relativistic cruising speeds of the FTL engines.

Engine	Minimum Ship Size	Starship's Cruising Speed
Progress Level 6: Fusion Age		
Fusion Torch	Gargantuan	Light Speed x 0.5
Ion Engine	Huge	Light Speed x 0.75
Photon Sails	Gargantuan	Light Speed x 1
Progress Level 7: Gravity Age		
Induction Engine	Huge	Light Speed x 5
Particle Impulse Engine	Gargantuan	Light Speed x 10
Progress Level 8: Energy Age		
Gravitic Redirector	Colossal	Light Speed x 25
Inertial Flux Engine	Gargantuan	Light Speed x 15
Progress Level 9: Matter Age		
Spatial Compressor	Colossal	Special[1]

1: A spatial compressor allows a ship to travel from one star system to another instantaneously.

Fantastic Travel Times

Travel times at relativistic speeds are generally easy to calculate. Simply determine how long it takes to arrive at the destination while traveling at the speed of light, then divide the result by the light speed multiplier on the drive being used. Some sample times are listed in the table above.

Teleportation

The earliest teleportation devices move only simple substances with uniform molecular structures. As the technology improves, teleporting more complex matter becomes possible. At Progress Level 8, living organic matter can pass more or less safely through teleporters. At Progress Level 9, the range of matter transference increases to cover galactic distances.

Transport Booth's Communication System	Price
Progress Level 5: Information Age	
Radio Transceiver	3,000 GPE
Progress Level 6: Fusion Age	
Laser Transceiver	5,000 GPE
Progress Level 7: Gravity Age	
Mass Transceiver	8,500 GPE
Progress Level 8: Energy Age	
Drive Transceiver	10,000 GPE
Progress Level 9: Matter Age	
Ansible	15,000 GPE

Teleporters

As with stardrives, multiples types of teleporters can exist, depending on the technology used to develop them.

Transport Booth (PL 8)

Based on original teleportation technology, a transport booth is simply a booth large enough to accommodate a single medium creature or huge object, with controls on the outside. An operator selects the destination booth (which is any other transport booth), waits for a clear signal from the destination, then transmits. Anything inside the booth is disassembled at the molecular level, translated into electronic data, and transmitted. The speed of the transmission depends on the communication technology used but even with the least effective communications any distance of less than 1,000 miles is virtually instantaneous.

Radio Transceiver (PL 5): A transport booth equipped with a radio transceiver can teleport its contents to a receiving booth positioned within 240,000 miles (roughly the

distance between Earth and the Moon). Since light travels at a speed of 186,000 miles per second, the transport is nearly instantaneous.

Laser Transceiver (PL 6): A transport booth equipped with a laser transceiver can teleport its contents to a receiving booth at any distance. However, the transmission travels at a speed of 8 AU/hour (or 744,000,000 miles/hour), making it practical only for interplanetary transport.

Mass Transceiver (PL 7): A transport booth equipped with a mass transceiver can teleport its contents to a receiving booth instantaneously. The maximum range of the transmission is 1,000 AU (roughly 93,000,000,000 miles).

Drive Transceiver (PL 8): A transport booth equipped with a drive transceiver can teleport its contents to a receiving booth within 1,000 AU (roughly 93,000,000,000 miles). The transport is virtually instantaneous.

Ansible (PL 9): A transport booth equipped with an ansible can teleport its contents to a receiving booth across interstellar space. The teleport occurs instantaneously, and the range of the teleport booth is effectively unlimited.

If the transport booth operator attempts to transmit before he gets a clear signal from the receiving booth, any living creature involved in the teleport must make a Fortitude save (DC 20). If the save fails, the living being immediately drops to -1 hit points and begins to die. Even if the save succeeds, the creature takes 2d4 points of Constitution damage. In either case, the teleported creature reaches the intended destination.

The price of the transport booth does not include the cost of the communication technology used to transmit the matter. See the table above for the price of Transport Booth Communication Systems.

Price: 40,000 GPE + Communication System
License to Purchase: +5,000 GPE

Transportal (PL 8)
The transportal is a contained teleportation field. Creatures step into it, and moments later they step out on the far side in a different location. The technology only allows transport from one transportal to another, though it is stable enough to remain open for several minutes with each activation and only requires about 30 minutes to recharge between activations. The only major drawback of the transportal is that it tends to disorient travelers. Any creature using a transportal must succeed on a Fortitude save (DC 15) or be shaken for 1d6 rounds upon arrival.

Price: 75,000 GPE
License to Purchase: +5,000 GPE

Transport Disk (PL 9)

The general technology of teleportation advances at Progress Level 9, to the point where a receiving station is no longer necessary. The traveler stands upon a disk on the floor, and the operator uses sensor technology to pinpoint the traveler's target destination. Pinpointing the target destination requires a successful 1st Use Computer check (see the DCs in the table below). Attempting to pinpoint the location without the aid of sensor technology imposes a -20 penalty on the Use Computer check.

When the operator transmits, any creature or object standing on the transport disk is instantly sent to the location the operator has selected. If the operator's Use Computer check fails by 10 or less, the teleported creature or object appears in a location 1d100 miles from the intended destination (determined randomly by the GM). If the check fails by 11 or more, the teleported creature or object materializes inside solid matter at some location 1d100 miles from the intended destination. Any living creature teleported into solid matter takes 20d6 points of damage, or half damage if a Fortitude save (DC 20) succeeds, it must also be freed from whatever she has materialized inside of.

Although the chance of a botched transmission is daunting to some, transport disks offer a tremendous advantage. With a successful 2nd Use Computers check (see below), a transport disk operator can locate a particular creature or object with computer sensors and teleport it from its present location to the transport disk. The range is limited only by the range of the sensors.

Price: 120,000 GPE
License to Purchase: +10,000 GPE

Distance	1st Computer Use DC	2nd Computer Use DC
Planetary	15	20
Interplanetary	20	25
Interstellar	25	30

Dimensional Travel

Humankind has long been fascinated with the idea of parallel dimensions, the theory being that alongside our own universe lie virtually identical universes in which people just like us live out their lives (and perhaps fantasize about parallel dimensions). The popular notion is that in a parallel dimension, some different decision was made, some random event occurred differently, or that some element in the composition of Earth is more common – and, as a result the universe is different to some degree or another. What if Wellington lose the Battle of Waterloo? What if the cataclysm that wiped out the dinosaurs never happened? What if Hitler conquered the world?

Of course, it could all be considerably more subtle than all that; perhaps all humans have gray eyes, and that's the only difference. The point is that in alternate realities, life could be different. Without ever leaving their home world, dimensional explorers could face challenges every bit as daunting as the challenges faced by space explorers.

Hazards of Dimensional Travel

Any initial exploration of parallel dimensions must logically proceed from a fixed location, because the amount of energy required would not allow for a portable power source. Thus, as with interstellar travel, early interdimensional trips are likely to be one-way. Fortunately, if a beachhead can be established in another dimensional, it should be a simple matter for subsequent expeditions to transport the materials necessary for the construction of another power source. It is in establishing that beachhead that the real risk lies.

Initial dimensional journeys are unlikely to be carried out by humans, but rather by probes designed to test the gravity, radiation levels, atmosphere, pressure, and temperature – and to bring back samples of microorganisms – to ensure that humans can survive, and that they are properly equipped. Such probes must be tethered to the original dimension to send back information (since there is no indication that communication signals would travel back any more easily than objects could).

The use of probes, however, should allow dimensional physicists to develop a kind of "matrix map." Not only can they note which dimensions are hostile to human life, but, with sufficient data points, they can extrapolate which dimension "frequencies" are likely to prove conducive to human life. The first human dimensional travelers are likely to be extremely well prepared for the environmental conditions they encounter.

Other factors may prove more hazardous, however. In addition to the perils of first contact with a xenophobic populace, dimensional travelers must contend with the possibility of equipment failure, dimensional static, scale variance, and encounters with other travelers who might not be friendly.

Equipment Failure

As the science of dimensional travel advances, explorers carry portable dimension gate generators, enabling them to come and go through dimensions as they please. If that equipment fails for some reason, the expedition might be trapped, possibly without the means to repair the damaged generator.

Dimension gate generators – whether stationary or portable – should not break down at random any more than a starship does (unless, of course, the campaign revolves around that very problem). The equipment failure should be a plot element introduced by the GM:

Complete Shutdown: The generator simply stops working, either because its components are damaged or because it has run out of power. Fixing damage components usually requires 10 hours and a successful Craft (electronic) check (DC 25), while constructing a new power source (a complex device) requires 60 hours and a successful Craft (electronic) check (DC 30). Locating a replacement power source in a civilized area may require a Diplomacy check to gather information, and negotiating for it may require an additional Diplomacy check or even an Intimidate check.

Miscalibration: A miscalibrated dimension gate generator doesn't take the characters where they planned to go. Correctly recalibrating the generator involves either downloading the data from another functional generator (a full-round action followed by a successful DC 10 Use Computers check) or returning to the last "accurate coordinates" or resetting the matrix (12 hours of work followed by a successful DC 25 Use Computers check).

Communication Failure: There is no guarantee that standard communications work across dimensions; even communications designed to work across interstellar distances are useless when the party for whom the message is intended is not in the same dimension. A d-com (see Dimensional Communicators below) or similar device enables communication across dimensions.

Dimensional Static

Dimensions are constantly splitting into new dimensions as events create alternate realities. These divergences release tremendous amounts of energy, which manifests as a kind of "static" during dimension gate operations. Generators are designed to filter out this noise and lock onto the specific "signal" of the intended destination. However, if the generator isn't getting enough power, or if the static level is extremely high, the gateway between dimensions is less stable.

Traveling through an unstable gate is potentially fatal. The traveler must make a Fortitude save (DC 15). If the check succeeds, the character arrives at the intended destination but is stunned for 1d4 rounds. If the check fails, the target arrives on target, but is nauseated for 1d4 hours. If the save fails by 5 or more, the character arrives on target, takes 2d6 points of Constitution damage, and is nauseated for 1d4 hours.

Scale Variance

A potential risk in traveling to other dimensions is a matter of size: is everything in the other dimension on the same scale as the travelers who visit it? GMs can simulate a scale variance by changing a character's effective size. For example, a medium-size character might be considered Fine in the new dimension. Such a variance, of course, changes the character's size modifier to attack rolls and AC. Speed also changes, multiplied by a factor based on the changes in size: Fine x0.16, Diminutive x0.33, Tiny x0.5, Small x0.66, Medium x1, Large x1.33, Huge x2, Gargantuan x2.66, Colossal x3.33

The damage a character deals with natural and artificial weapons also scales with size. For every step by which a character's size increases or decreases, increase or decrease the damage by one step: 1, 1d2, 1d3, 1d4, 1d6, 1d8, 2d6, 3d6, 4d6, 6d6, 8d6, 12d6. Attacks that deal 2d4 points of damage scale down to 1d6 or up to 2d6. Attacks that deal 1d10 points of damage scale down to 1d8 and up to 2d6. Attacks that deal 1d12 points of damage scale down to 1d8 and up to 3d6.

Dimensional Opponents

If humans are capable of traveling through dimensions, it is reasonable to believe that intelligent beings, either from other worlds or other dimensions, also have this capability. Other dimensional travelers might not be friendly. They might be raiders, plundering other dimensions for the resources they lack in their own. They could just as easily be transdimensional traffic police, tasked with detecting and disabling unauthorized dimension gate generators. They could simply be a savage monster, naturally capable of dimensional travel and drawn to unusual interdimensional activity.

Dimension Gate Generators

The technology behind dimension gates is highly advanced. The first working gates are treated as late Progress Level 7 technology, and concerted human exploration of alternative dimensions begins at Progress Level 8.The calculations required for dimensional travel are complex, but the calculations for safe travel – arriving at the intended destination with no loss or carrier signal – are tens of thousands of times more complex.

Actually traveling through a dimension gate is easy, but changing the setting is more complex. A character must succeed on a Use Computer check (DC 30) to reset the gate to a known destination; setting the gate to an unknown (but safe) destination is a DC 40 Use Computers check. (The GM should roll these checks secretly.) Performing either check requires 30 minutes of calibration. Of course, if the destinations have been preset, any character can change the settings as a move action without making a check.

Dimension gate generators come in a variety of forms, each operating somewhat differently.

D-Gate Generator (PL 7-9)

The first dimension gate generators – appearing at Progress Level 7 – are Gargantuan objects that cannot be transported once assembled. The PL 7 D-Gate creates a transdimensional aperture approximately 10 feet in diameter and allows for one-way transport only. Due to the incredible power drain, the gate remains open for only 1 hour after which the generator shuts down and cannot be activated again for 24 hours.

The PL 8 D-Gate is a huge object weighing 200 lbs. but due to its bulk, the generator requires at least two people to lift and haul it. It creates a transdimensional aperture up to 20 feet in diameter, and the generator can keep the gate open for up to 10 rounds, after which the generator shuts down and cannot be activated again for 24 hours. Dimensional mapping makes calculations to reset the gate's destination easier (Use Computers DC 25), and any given gate can store up to five predetermined destinations. Travel is still one-way, but with the larger aperture and the destination presets, the equipment to construct another D-Gate can be transported through, and the traveler's home dimension can be locked to the new gate upon startup.

At PL 9, D-Gates large enough to transport starships exist (although they can be almost any size), and they can store up to twenty predetermined destinations. The calculations are even easier (Use Computers DC 20), and scientists have finally learned how to keep the gate open indefinitely. Best of all, dimensional travel through PL 9 D-Gates is two-way, allowing for round trips.

Price: 76,000 GPE (PL 7 D-Gate Generator), 60,000 GPE (PL 8 D-Gate Generator), 50,000 GPE (PL 9 D-Gate Generator)
License to Purchase: +15,000 GPE

D-Drive Generator (PL 8-9)
The D-Drive generator can be incorporated into a starship's engine design, allowing the ship to travel between dimensions. Considered the safest form of dimensional travel, D-Drive generators allow ships in space to cross dimensions. Due to the enormous power drain, the D-Drive generator shuts down for 12 hours after the dimensional jump is completed. In addition, the starship's weapon systems, defense fields, defense screens, and engines shut down for 2 hours. At Progress Level 8, only colossal starships can be fitted with a D-Drive generator.

Progress Level 9 sees many improvements in the D-Drive generator. Any size starship can be equipped with one, and the generator can be reactivated after 6 hours; the ship's disabled weapons, defense fields, defense screens, and engines come back online after only 10 minutes.

Price: 60,000 GPE (PL 8 D-Drive Generator), 45,000 GPE (PL 9 D-Drive Generator)
License to Purchase: +15,000 GPE

Dimension Wand (PL 8-9)

The dimension wand is a personal dimension gate generator. It creates a rupture in the fabric of reality just large enough for one character to step through into another dimension. The gate remains open until the wand itself passes through, so multiple characters can step through without using their own wands. The drawback to the dimension wand is that it must be recalibrated after each use (see Equipment Failure above) or entirely new dimension coordinates must be entered, as though changing the settings. The PL 8 version of the dimension wand weighs only 1 lbs. The PL 9 version has the same price, with the added benefit that it stores the last five dimensional coordinates automatically, enabling anyone to thumb through the settings without recalibrating the wand.

Weight: 1 lbs.
Price: 40,000 GPE
License to Purchase: 10,000 GPE

Other Gear

In addition to dimension generators, most dimensional travelers at Progress Level 8 and beyond carry dimensional transceivers.

Dimensional Transceiver (PL 8)

A dimensional transceiver permits two-way communication across dimensions, although dimensional static can sometimes hinder or block communications (at the GM's discretion). The somewhat bulky PL 8 transceiver can be carried like a backpack; a handheld version is available at PL 9.

A dimensional transceiver must be calibrated to transmit signals to a given dimension. Assuming the coordinates have already been plotted using some kind of dimension generator (see above), calibrating the transceiver takes a full-round action and requires a successful Use Computers check (DC 15), the PL 9 version can store the coordinates of up to five different dimensions.

Weight: 4 lbs. (PL 8), 1 lbs. (PL 9)
Price: 16,000 GPE
License to Purchase: +10,000 GPE

Time Travel

The dream of time travel probably arose out of a desire to go back and correct one's past mistakes – or visit the future and subsequently return to take advantage of foreknowledge. The concept intrigues historians and archaeologists for obvious reasons. Science fiction has explored the possibility of time travel many times, as well as the pitfalls of visiting the past and impacting the future.

Technically, time travel – of the "into the future" sort – is within the realm of possibility. In fact, it happens all the time – just on such a small scale that no one notices. Given that a starship engine could be developed that accelerates a ship to relativistic speeds at which time dilation occurs, time travel can be achieved simply by achieving 90% the speed of light for a short time, then returning to the point of origin. For every minute you spend flying at 90% the seed of light, 2.3 minutes pass everywhere else. Travel at relativistic speeds long enough and you can return to a time predating the rise of human civilization!

Traveling into the future isn't a very useful ability if no one has a way back – which is where the concept of traveling into the past breaks down. The principle of causality rather logically argues that an effect cannot occur before its cause – meaning, in this case, that one cannot arrive in the past via the use of a time machine before that time machine is invented.

Hazards of Time Travel

The time machine is perhaps more dangerous than any other technology that manipulates space and time. Not only can unscrupulous people use it to wreak havoc in the past and take advantage of knowledge from the future, but a single misstep could forever alter the course of history.

Temporal Paradoxes

Trips through time are exercises in causality. Traveling into the past might set in motion a chain of actions culminating in different major historical events. Characters might return to the present to discover the Roman emperor Caligula used intercontinental ballistic missile to conquer Europe and the Middle East. Conceivably, history could be altered in a way that prompts the Soviet Union to invade and conquer North America. Perhaps the characters can't even return to their own time because the person who invented the crucial component of the time machine was never born, for some reason. In short, the permutations of cause and effect can be infinitely mind-boggling.

Temporal paradoxes are liable to stall the development of time travel until someone can prove either that (a) actions in the past by people from the present have, in fact, already happened (and that it was those actions that led to the current state of affairs), or (b) actions in the past that affect the present can be detected and averted by sending someone else into the past to prevent those actions from happening.

Alternate Realities

Another potential side-effect of time travel popularized in literature is the alternate reality. The timestream in which time travel is invented continues to exist. Situations that create significant changes or temporal paradoxes serves as the locus or intersection point where realities diverse.

The time travelers might encounter worlds very similar to or different from their own. This creates a rich diversity of settings where establishing "facts" and "rules" are no longer sure. The nefarious villain recently defeated in a different reality might be a trustworthy ally in this one. A temporal adventurer might encounter a dead companion who did not die in this alternate reality. The possible permutations are infinite.

Ever-Changing Landscapes

Time machines that do not actually move are at the mercy of topographical changes and other changes in the locations in which they appear. Never mind that one couldn't construct a time machine in New Mexico and use it to visit Jerusalem in the year 33 A.D. Traveling into the past might deposit you in the middle of a rushing river or under thousands of tons of glacial ice. Traveling into the future, you might find that the position occupied by your time machine now resides in the basement of a futuristic skyscraper or in the middle of a radioactive wasteland covered by ice – a result of an extraordinarily heavy and sustained nuclear bombardment.

Language

Modern language is loaded with slang, jargon, and colloquialisms that would mean nothing to people who lived in the 19th century. Their slang, jargon, and colloquialisms, by the same token, would mean nothing to those who lived in the 18th century. Go back another thousand years, and the words you are reading right now would be abll but incomprehensible to the average English-speaking person – assuming he or she could read. Your speech would be equally incomprehensible. Go forward a thousand years, and the English of the new millennium will barely resemble the English of this millennium. Without a language for the appropriate era, communication could more closely resemble a game of charades.

Age

Those who travel in time age normally within their localized time. So, while eons may pass in the blind it takes to travel through them, the time traveler feels none of the effects of aging. However, this can work against the traveler. If he were to spend twenty years in his own timeframe exploring the centuries, then return to his starting point, he would, in fact, be twenty years older than he was when he left.

Time Machines

Temporal displacement drives – colloquially known as "time machines" – do not exist until Progress Level 8. The first time machines are faintly reminiscent of the brass, ivory, and quartz machine invented by H.G. Wells in his novel *The Time Machine* though made of lightweight aluminum and resembling something more like a bathyspheres. Those that follow are constructed as fixed tunnels leading to nowhere, while those mounted in starships turn the entire ship into the time machine.

Time Sphere (PL 8)

Time spheres are small, two-seated modules designed to withstand any reasonable amount of buffeting that might occur when the machine finally comes to rest in a different time period. At the very least, the self-contained atmosphere should give the occupants time to "reverse course" should they discovery that conditions outside are too hostile to disembark. The time sphere carries sensors designed to test outside conditions immediately upon arrival.

The temporal displacement mechanism itself is arranged around the inside of the sphere, giving the occupants full access to the electronics in case of emergency. The main computer has all programs necessary to operate the machine and is crammed with historical and linguistic information, electronic encyclopedias, and any other information that might be necessary to survive in a different time. Operation of the time sphere is quite simple for characters familiar with computers. One simple sets the desired date and time and presses the "Go" button.

Time spheres are not sold commercially. In fact, doing so is illegal, but the plans to construct them are quite common. The components have a total price of 35,000 GPE. Building a time sphere chassis takes 12 hours and requires a successful Craft (machinery) skill check (DC 25). Building and filling the time sphere's computer (a much more daunting exercise) takes 120 hours and requires a successful Craft (electronic) check (DC 35).

Time Spheres have the following statistics:

Crew: 2; **Passengers:** 0; **Cargo:** 120 lbs.; **AC:** 6; **Hardness:** 5; **Hit Points:** 24; **Size:** Huge; **Price:** 100,000 GPE, **License to Purchase:** Illegal

Temporal Drive Generator (PL 9)

Like the D-Drive Generator, which is designed to carry starships across dimensional boundaries, the temporal drive generator (or T-Drive Generator) carries starships through time. The drive can be mounted in a starship of any size and turns the entire ship into a time machine.

Price: 80,000 GPE
License to Purchase: +15,000 GPE

Time Bridge (PL 9)

Doing away with the issue of portability, the time bridge opens a portal to other times *and* other places. The time bridge also has the advantage of not leaving a fragile piece of vital equipment lying about while its operators go exploring. Instead, the travelers use a simple "message-drop" system to communicate with their base of operations: Upon arrival, they conceal a small transmitter somewhere near the point of embarkation. They then have a prearranged amount of time to explore and return to the location to catch the next appearance of the time bridge. If they do not return, an operative from their base emerges to search for the transmitter. Assuming he finds it, the operative records a message on the transmitter, letting the explorers know when the bridge will reappear again, or he collects any recorded message the explorers might have left indicating where and when to pick them up. The process repeats until the explorers are brought back safely.

Travel through the time bridge is comparable to walking through a tunnel. Operators at the base set the temporal and physical coordinates at the other end, and a team of travelers walk into the tunnel and seems to vanish. For the travelers, the point of origin simple becomes less "real" as the destinations becomes more real. The bridge is large enough to accommodate vehicles up to huge size.

Price: 125,000 GPE
**License to Purchase:** Illegal

Starships

The most recognizable staples of science fiction, starships play an important role in a sci-fi roleplaying game. This presents rules for creating entirely new starships, as well as modifications for ships and ship enhancements. Additionally, this includes rules for running starship combat and new actions for both pilots and crewmembers in space, as well as supplemental starship operation rules.

Starship Combat Basics

The rules for starship combat are based on the rules for character combat. Like character-scale combat, starship battles unfold on a square grid, with each starship occupying one or more squares on the grid. As with character-scale combat, starship battles play out in rounds.

Starship Fighting Space

Each square in a starship scale measures 500 feet along a side (instead of 5 feet, as in character-scale combat). All starships, regardless of size, have a square of fighting space. Some starships occupy a single 500-foot square, while others have a larger fighting space as noted in the Starship Fighting Space diagram below.

Starship Fighting Space
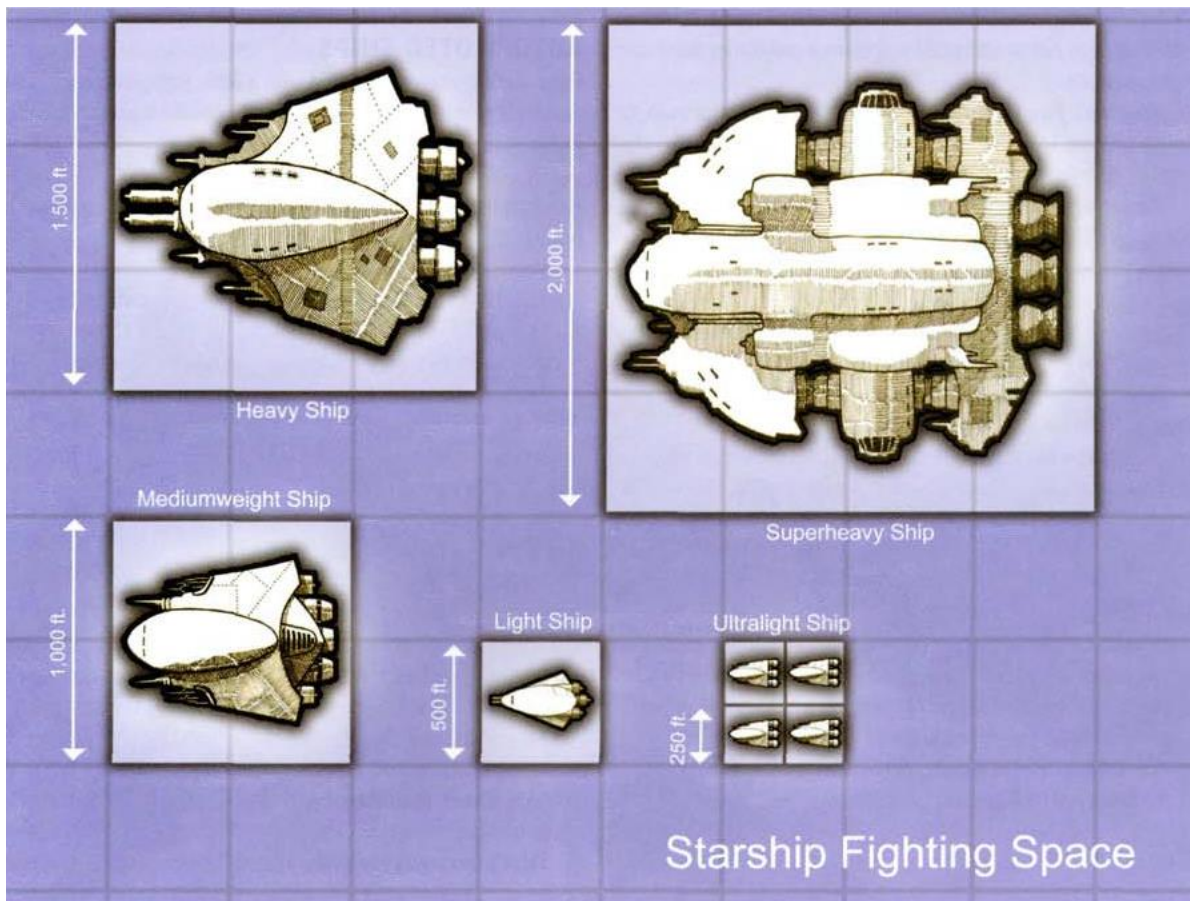
An ultralight starship can be up to 250 feet long. It occupies a 250 foot by 250 foot fighting space, and up to four ultralight starship can occupy a single 500-foot square.

A light starship measures 251-500 feet in length and has a 500 foot by 500 foot fighting space and occupies a single 500 foot square.

A mediumweight starship measures 501-1,000 feet in length. It occupies a 1,000 foot by 1,000 foot fighting space (four 500 foot squares).

A heavy starship measures 1,001-1,500 feet long. It has a 1,500 by 1,500 foot fighting space (nine 500 foot squares).

A superheavy starship is 1,501 feet long or longer. The smallest superheavy starships (measuring 1,501-2,000 feet long) have a 2,000 foot by 2,000 foot fighting space (sixteen 500-foot squares), although larger fighting spaces are possible.

Starship Combat Sequence

Starship combat is played out in rounds. Each round, each starship acts in turn in a regular cycle. Generally, starship combat runs as follows.

- Step 1: Every starship starts the battle flat-footed. Once a starship acts, it is no longer flat-footed.
- Step 2: The GM determines which starships are aware of each other at the start of the battle. (Cloaking devices and other devises might hide a ship from another ship's sensors.) If some but not all of the starships are aware of their enemies, a surprise round happens before regular rounds begin. Starships that are aware of the enemy can act in the surprise round, so they roll for initiative. In initiative order (highest to lowest), starships that started the battle aware of their enemies each take one move or attack action. Starships that were unaware don't get to act in the surprise round. If no starship or every starship begins the battle aware, there is no surprise round.
- Step 3: Starships that have not yet rolled initiative do so. All starships are now ready to begin their first regular round.
- Step 4: Starships act in initiative order. All crew aboard a starship act on the starship's turn.
- Step 5: When each starship has had a turn, the starship with the highest initiative acts again, and steps 4 and 5 repeat until combat ends.

Combat Statistics

Several fundamental statistics determine how well a starship performs in combat. This section summarizes these vital statistics, and the following sections detail how to use them.

Starship Size	Starship Size Modifer	Targeting System Bonus	Autopilot AC Bonus
Large	-1	+1	+1
Huge	-2	+2	+2
Gargantuan	-4	+3	+3
Colossal	-8	+4	+4

Attack Roll

An attack roll represents one starship's attempt to strike another on its turn in a round. Most starships are armed with ranged weapons aimed by gunners.

When a starship makes an attack roll, roll 1d20 and add the appropriate modifiers (described below). If the result equals or beats the target's AC, the attack hits and deals damage. A starship's attack roll is:

1d20 + gunner's ranged attack bonus + range penalty + starship's size modifier + targeting system bonus

Gunner's Ranged Attack Bonus: Without the Starship Gunnery feat, a starship gunner takes a -4 nonproficient penalty on attack rolls with starship weapons. If a starship gunner is hired onto a crew, they are assumed to have the Starship Gunnery feat.

For simplicity, all NPC gunners aboard a single starship have identical ranged attack bonuses.

Range Penalty: The range penalty for a ranged weapon depends on what weapon the starship is using and the distance to the target. All ranged weapons have a range increment, as noted on Starship Weapons.

As with character weapons, any attack made from a distance of less than one range increment is not penalized for range, so a plasma cannon (range increment 3,000 feet) can strike enemies up to 2,999 feet away with no penalty. However, each full range increment causes a cumulative -2 penalty on the attack roll.

A beam weapon has a maximum range of 10 increments. A projectile weapon has an unlimited range, since projectiles don't lose inertia in space.

Starship's Size Modifier: Starships are Large, Huge, Gargantuan, or Colossal in size. The table above notes the modifiers for different sizes.

Targeting System Bonus: Most starships have computerized targeting systems to help gunners train weapons on targets. A standard targeting system provides an insight bonus on the gunner's attack roll depending on the ship's size. Improved targeting systems grant higher bonuses.

Automatic Misses and Hits: As in character combat, a natural 1 on the attack roll is always a miss. A natural 20 is always a hit. A natural 20 also always threatens a critical hit.

AC

A starship's AC represents how difficult it is to hit in combat. It's the attack roll result that the enemy needs to achieve a hit. In general, starships are easy to hit, which is why they rely on armor to absorb damage.

A starship's AC is partly determined by the skill of the pilot, or the quality of its automatic pilot system.

Piloted Ships

A starship with a living pilot has an AC equal to:

10 + Starship's Size Modifier + Pilot's Dexterity Bonus to AC + ½ Ranks in Pilot

Starship's Size Modifier: The bigger a starship is, the easier it is to hit in combat. The smaller it is, the harder it is to hit.

Pilot's Dexterity Bonus to AC: In any given round, a pilot may choose to transfer her full Dexterity bonus to the starship's AC. However, doing so forces the pilot to focus entirely on flying the ship, and consequently the pilot loses the Dexterity bonus to her own AC for the round.

A pilot cannot apply her Dexterity bonus to a starship's AC if she or the starship are flat-footed.

½ Ranks in Pilot: Due to "class bonus to defense" not being present in the Pathfinder system, instead Pilots of their ship add ½ the ranks they have in the Pilot skill to AC so long as they are the driver of the starship.

Autopiloted Ships

Every starship comes equipped with a basic autopilot system that enables it to dodge enemy fire without need for a pilot. A starship on autopilot has an AC equal to:

10 + Starship's Size Modifier + Autopilot System Bonus

Starship's Size Modifier: Size modifiers are shown on the table above.

Autopilot System Bonus: An autopilot system provides an insight bonus to AC depending on the ship's size. A ship equipped with an improved autopilot system gains a higher bonus.

Crew

The quality of the crew determines how well a starship performs in and out of combat. Unless otherwise noted, every starship has a trained crew of characters with NPC classes. However, situations could arise where a starship must rely on an untrained crew. Conversely, expert crews and ace crews are also available - for the right price. The table below compares the four different equalities of crews.

Crew Quality	Skill Check Mod	Ranks in Pilot	Pilot's Dex Mod	Gunner's Attack Bonus	Price
Untrained	+0	0	+0	-4	+500 GPE
Trained	+7	2	+2	+2	+1,000 GPE
Expert	+11	4	+4	+4	+6,000 GPE
Ace	+15	6	+6	+8/+3	+12,000 GPE

Skill Check Modifier: Apply this modifier to all skill checks made by the crew.

Pilot's Dexterity Modifier: A pilot's Dexterity modifier applies to the starship's initiative rolls and the starship's AC.

Ranks in Pilot: The pilot's ranks in pilot. Divide this number by two to determine how much of the pilot's Pilot skill goes into AC.

Gunner's Attack Bonus: A gunner's attack bonus applies to all ranged attacks made by the ship.

Price: The amount by which the crew increases the price of the ship.

Crew Improvement

To improve in quality, a starship's crew of NPC class characters must "put in the hours" and gain combat experience. The table below shows the length of the crew's tour of duty and the number of ship-to-ship battles the crew must survive to be considered of a particular quality. A crew cannot be elevated to a higher quality until it meets the minimum requires time spent serving aboard the ship and the minimum amount of ship-to-ship combat experience.

Crew Quality	Length of Tour of Duty	Starship Battles Survived
Untrained	0-5 Months	0
Trained	6-11 Months	0-3
Expert	12-35 Months	4-11
Ace	3 Years or more	12+

Damage

When a starship hits with a weapon, it deals damage according to the type of weapon. Damage is deduced from the target's current hit points. If a starship's hit points are reduced to 0 or fewer, the ship is in bad shape.

Multiplying Damage

Sometimes a starship weapon multiplies damage by some factor such as when it scores a critical hit. Just as in character combat, you can either roll the damage (with all modifiers) multiple times and total the results, or roll the damage once and multiply the result by the given multiplier.

Bonus damage represented as extra dice, such as precision damage, is an exception. Do not multiply bonus damage dice when a starship scores a critical hit.

Critical Hits

Critical hits by starships work just like critical hits by characters. When a starship makes an attack roll and gets a natural 20 (an auto-hit) or meets the weapon's crit threat range, the attack is considered a critical hit. If the critical threat is not a natural 20 and would not hit the target's normal AC, it is not a hit or critical hit. To find out whether the critical hit confirms, make another attack roll with the same modifiers as the first attack (unless there are specific bonuses added onto critical confirmation rolls). If the roll also results in a hit against the target's AC, the crit is confirmed.

Starship Armor

Starship armor is designed to absorb damage rather than make a starship harder to hit. Consequently, a starship's armor plating provides hardness instead of an armor bonus to AC.

Subtract a starship's hardness from the damage each time it takes a hit. If a ship's hardness it greater or equal to the amount of damage dealt, the starship takes no damage. For example, if a laser beam deals 12 points of damage to a ship with vanadium armor (hardness 30), the ship takes no damage.

Damage Control

A starship equipped with a damage control system can perform damage control as a move action. With a successful Craft (machinery) check (DC 15), the ship regains a number of hit points depending on its type. A ship with an improved or advanced damage control system regains even more hit points.

Damage control cannot be performed if the ship has been reduced to negative hit points.

Hit Points

A starship's hit points represent how much punishment it can take before being disabled or destroyed. A starship's hit points are based on its type and subtype.

A starship's hit points decrease when it takes damage. Damage doesn't have any impact on a ship's combat ability until its current hit points reach 0 or lower.

At 0 hit points, a ship is disabled.

At negative hit points, a ship begins breaking apart.

When its hit points drop to a certain negative hit point total, the ship is destroyed. The point at which it's destroyed is showed below.

Ship Type	Destroyed At
Ultralight	-20 HP
Light	-40 HP
Mediumweight	-60 HP
Heavy	-80 HP
Superheavy	-100 HP

Disabled (0 Hit Points)

When a starship's current hit points drop exactly to 0, it's disabled. The ship can only take a single move or attack action each turn (not both); it cannot jump to cruising speed or take any other full-round actions. If it attacks, attempts to escape at cruising speed, or performs any other action that would strain its systems (GM's discretion) it takes 1 point of damage after completing the act. Unless the activity increases the starship's current hit points, it drops to -1 hit points and begins breaking apart.

A disabled starship is considered helpless. It has an AC of 10 + size modifier.

Repairs that raise a starship above 0 hit points make it fully functional again, just as if it had never been reduced to 0 or lower.

Breaking Apart (Negative Hit Points)

When a starship's current hit points drop below 0, the starship begins to break apart. At this point, the ship is immobile, helpless, and beyond repair. Any attempt to repair it automatically fails. As a ship breaks apart, its crew can evacuate.

A ship that is breaking apart can take no actions and loses 1 hit point every round. This continues until the ship is destroyed.

Destroyed

When a starship's current hit points reaches its destruction threshold as shown above, it explodes. Any crewmembers still aboard the ship at this time take 20d6 points of damage (no save) and are jettisoned into the void of space.

Starship Evacuation

Most ultralight starships are equipped with evacuation pods or fully enclosed, detachable cockpits that jettison the crew safely in the event of a shipwide catastrophe. In fact, unless noted otherwise every starship has sufficient evacuation pods or launchers to accommodate its normal crew compliment and passenger manifest.

Ship Type	Untrained Crew Evacuation Time	Trained Crew Evacuation Time[1]
Ultralight	1d3 rounds	Move action
Light	1d6 rounds	Full-round action
Mediumweight	2d6 rounds	1d4 rounds
Heavy	3d6 rounds	2d4 rounds
Superheavy	4d6 rounds	3d4 rounds

1: Includes Expert and Ace crews.

A ship's crew and passengers can evacuate any time before the ship is destroyed. The table above shows the time required for crews to evacuate, based on the ship's type. While the crew is evacuating, the starship either flies on autopilot (if it has 1 hp or more) or is stopped dead in space (if it has been disabled or is breaking apart).

Speed

Starships have two basic speeds: tactical speed and cruising speed.

Tactical Speed

Tactical speed only comes into play when two or more starships engage in battle or otherwise interact with each other. A ship's tactical speed is measured in 500-foot squares and tells how far a starship can move in a move action. A starship's tactical speed depends on the type of ship and the type of engines (see Starship Engines). Certain types of armor can reduce a starship's tactical speed (see Starship Armor).

A starship normally moves as a move action, leaving an attack action to attack. It can, however, use its attack action as a second move action. This could let the ship move again, for a total movement of up to double its normal tactical speed. Another option is to surge forward (a full-round action). This lets the ship move up to four times its normal speed, but it can only surge forward in a straight line, and doing so reduces AC.

Cruising Speed

Cruising speed determines how quickly a ship moves across vast distances, such as between planets or star systems. A ship's cruising speed depends on the type of ship and its engines.

A ship can enter or leave a battle at cruising speed, but once it enters battle, it automatically drops to tactical speed. Cruising speed does not come into play during starship battles or in any other situation where two or more starships interact.

Initiative

Every round, each starships gets to do something. The starship's initiative checks, from highest to lowest, determine the orders in which they act.

Initiative Checks

At the start of a battle, each starship makes a single initiative check. An initiative check is a Dexterity check that uses the starship pilot's Dexterity modifier. (A ship without a pilot has an initiative check modifier of +0.) A pilot with the Improved Initiative feat adds the +4 to a starship's initiative.

The GM determines what order starships are acting in, counting down from highest initiative result to lowest, and each starship acts in turn. On all following rounds, the starships act in the same order (unless a starship takes an action that changes its initiative). If two or more starships have the same initiative check result, the starships that are tied to go in order of total initiative modifier (including Dexterity modifier and Improved Initiative feat bonus, if applicable). If there is still a tie, roll a 1d20 until someone gets the higher result.

Flat-Footed Starship: At the start of a battle, before a starship has had a chance to act (specifically, before its first turn in the initiative order), it is flat-footed. It can't apply the pilot's Dexterity or Dodge to AC while flat-footed.

Joining a Battle

If starships enter a battle after it has begun, they roll initiative at that time and act whenever their turn comes up in the existing order.

Surprise

At the start of combat, a starship is surprised if it was not aware of its enemies and they were aware of it. Likewise, a starship can surprise its enemies if it knows about them before they're aware of it.

Determining Awareness

The GM determines which starships are aware of which others at the start of any battle. The GM may call for a Use Computers check to operate shipboard sensors, Perception, or other checks to determine whether one ship detects another.

A ship makes only one roll or check against surprise, regardless of its crew complement.

The Surprise Round

If some but not all of the starships are aware of their enemies, a surprise round happens before regular round begin. Starships that are aware of their enemies can act in the surprise round, so they can roll for initiative. In initiative order (highest to lowest), starships that started the battle aware of their opponents each take either an attack action or move action during the surprise round. If no starship or all starships are surprised, a surprise round does not occur.

Starships that are unaware at the start of battle do not get to act in the surprise round. Unaware combatants are flat-footed because they have not acted yet. A flat-footed starship loses its pilot's Dexterity modifier to AC.

Starship Actions

The fundamental actions of moving and attacking cover most cover most of what a starship wants to do in a battle. They're described here. Other, more specialized options are touched on in the Starship Actions table, and covered in Special Initiative Actions.

A starship gets two move actions and one attack action each round. It can take two move actions followed by an attack action, an attack action followed by two move actions, or an attack action sandwiched between two move actions. A ship may choose to not take an attack action on its turn, but it gets only two move action regardless. It can also forgo all of the above combinations and take a single full-round action. All of these options are discussed below under Action Types.

Attack Action -> Move Action -> Move Action
or
Move Action -> Attack Action -> Move Action
or
Move Action -> Move Action -> Attack Action
or
Full-round Action

The Combat Round

As with character-scale combat, each round of starship combat represents about 6 seconds in the game world. Each round's activity begins with the starship with the highest initiative result and then proceeds, in order, from there. Each round of a combat uses the same initiative order. When a starship's turn comes up in the initiative sequence, that ship performs its entire round's worth of actions.

Attack Actions	Attack of Opportunity[2]
Aid another	No
Attack (ranged)	No
Attack an object	No
Escape a grappling ship	No
Feint	No
Grapple another ship[1]	Yes
Total defense	No

Move Actions	Attack of Opportunity[2]
Damage control	No
Move at tactical speed	No
Operate sensors	No
Ram[3]	Yes
Sending/jamming a transmission	No
Start/complete a full-round action	Varies

Full-Round Actions	Attack of Opportunity[2]
Jump to cruising speed	Yes
Surge forward	Yes
Withdraw	No
Full Attack	No

Free Actions	Attack of Opportunity[2]
Communicate via comm	No
Turn	No

Special Initiative Actions	Attack of Opportunity[2]
Delay	No
Ready	No

No Action	Attack of Opportunity[2]
500-foot shift	No
Avoid hazard	No

1: Technically, a grapple constitutes a single melee attack, not an action. A grapple can be made once in an attack action, or as an attack of opportunity.
2: Only starships armed with point-defense systems can make attacks of opportunity.
3: Ramming is considered part of a move action.

Action Types

As in character combat, starships may make attack actions, full-round actions, move actions, and free actions. In a normal round, a starship can perform an attack action and two move actions (in any order), two move actions, or a single full-round action. It can also perform as many free actions as the GM allows.

In some situations (such as a surprise round), a starship may be limited to taking only a single attack or move action.

Attack Action

An attack action allows a starship to make an attack or perform a similar action.

Move Action

A move action allows a ship to move its tactical speed or perform some other action that takes a similar amount of time. If a starship moves no actual distance in a round, it can take one 500-foot shift before, during, or after the action. For example, a starship can perform damage control (a move action) twice on its turn. Assuming it doesn't move, it can also take one 500-foot shift.

A ship cannot take a 500-foot shift if it used one or both of its move actions to move.

Full-Round Action

A full-round action consumes all of the starship's time during a round. The only movement it can take during a full-round action is a 500-foot shift before, during, or after the action. Some full-round actions do not allow you to take a 500-foot shift. A starship can also perform free actions as the GM allows.

Free Action

Free actions consume a very small amount of time and effort, and over the span of the round, their impact is so minor that they are considered free. However, the GM puts reasonable limits on what a ship can really do free.

Attack Actions

Most common attack actions are described below.

Attack (Ranged)

As a single attack action, a ship can fire one of its ranged weapons at any target or targets within range and within line of sight. A target is in line of sight if there are no solid obstructions between the attacking ship and the target. A maximum range for a beam weapon is 10 range increments. Weapons that fire projectiles have an unlimited range in space.

If a starship fires a ranged weapon that occupies a square adjacent to an ally, it takes a -4 penalty on its attack roll unless the gunner possess the Precise Shot feat.

Attacks of Opportunity: A starship can fire its ranged weapons without provoking attacks of opportunity from enemy ships.

Attack an Object

Below here is a list of objects that can be attacked, what their hardness, AC, and hit points are for the objects. Colossal objects occupy four 500-foot squares (a 1,000-foot-by-1,000-foot fighting space). All other objects occupy a single 500-foot square.

Object	AC	Hardness	Hit Points
Asteroid, Large	9	6	1,125
Asteroid, Huge	8	6	4,500
Asteroid, Gargantuan	6	8	9,000
Asteroid, Colossal	4	8	36,000
Debris cloud, Gargantuan	6	8	400
Debris cloud, Colossal	4	8	1,600
Iceball, Large	9	6	225
Iceball, Huge	8	6	900
Iceball, Gargantuan	6	8	1,800
ICeball, Colossal	4	8	7,200
Mine (Medium)	10	10	50
Space hulk, Huge	8	6	450
Space hulk, Gargantuan	6	8	900
Space hulk, Colossal	4	8	3,600

Grapple Another Ship

For rules on using grapplers and tractor beams to hold and immobilize starships.

Escape A Grappling Ship

Grappler arms and tractor beams allow starships to hold and immobilize one another. The rules for escaping grapplers and tractor beams are on the Grappling Systems section.

Aid Another

A starship can help an ally attack or defend by distracting or interfering with an enemy in weapon range. The aiding starship makes an attack roll against AC 10. If the attack roll succeeds, the starship doesn't actually damage the enemy ship – but its ally gains either a +2 circumstance bonus on attack rolls against that opponent, or a +2 circumstance bonus to AC against the opponent (your choice) on its next turn.

Feint

Works just like the feinting rules for normal character combat.

Total Defense/Fighting Defensively

Both of these work similarly to normal character combat.

Move Actions

Unless otherwise noted, move actions don't require a Pilot check to perform.

Move at Tactical Speed

A starship can move its tactical speed as a move action. If it takes this kind of move action during its turn, it cannot also take a 500-foot shift.

Attacks of Opportunity: Moving through a threatened square provokes an attack of opportunity if the enemy ship has a point-defense system.

Damage Control

A starship equipped with a damage control system can perform damage control as a move action.

Damage control cannot be perform if the ship has been reduced to negative hit points.

Ram

Ramming is considered part of a move action.

A pilot can use her starship to ram an object, including another starship. First, the pilot must enter the target's square or fighting space and declare her attempt to ram the target. If the target has a point-defense system, it can make an attack of opportunity against the ramming starship. Second, the pilot must make a Pilot check (DC 5 + target's AC). If the Pilot check fails, the ship misses and the target may finish its move. If the check succeeds, the starship collides with the intended target, dealing damage both to itself and the target (reduced by hardness if applicable).

A pilot cannot ram the same ship or object more than once during a given round. However, a pilot that fails to ram a target may attempt to ram a different target if her starship has sufficient movement left to reach the new target.

The table below shows the amount of damage dealt to both colliding forces, based on the size of the smaller of the two colliding objects. For example, if a huge fighter rams a gargantuan destroyer (or vice versa), both ships take 3d6x10 points of damage, reduced by each ship's hardness.

Size of Smaller Ship/Object	Collision Damage
Colossal	12d6x10
Gargantuan	6d6x10
Huge	3d6x10
Large	1d6x10
Medium or smaller	-

Example Starships

Below are example starships and their statistics.

Orbital Shuttle (PL 5)

An orbital shuttle can haul people and light equipment into orbit and return safely to the planet below, but it is not suitable for long-range space travel to other planets or star systems.

Standard PL 5 Design Specs:

> **Engines:** Thrusters
> **Armor:** Alloy plating
> **Defense Systems:** Autopilot system, damage control system (1d10)
> **Sensors:** Class I sensor array
> **Communications:** Radio transceiver
> **Weapons:** None
> **Grappling Systems:** Grapplers

Type: Ultralight	**Size:** Gargantuan (-4 Size)
Subtype: Orbital Shuttle	**Tactical Speed:** 2,500 ft. (5 sq.)
AC: 10	**Length:** 60 feet
Flat-footed AC: 8	**Weight:** 220,000 lbs.
Autopilot AC: 7	**Targeting System Bonus:** -
Hardness: 20	**Crew:** 4 (trained +4)
Hit Points: 6d20 (120 HP)	**Passenger Capacity:** 12
Initiative Modifier: +2	**Cargo Capacity:** 22,000 lbs.
½ Pilot Ranks: 2	**Grapple Modifier:** +12
Pilot's Dex Modifier: +2	**Price:** 50,000 GPE
Gunner's Attack Bonus: -	**License to Purchase:** 10,000 GPE

Courier (PL 6)

A courier is capable of extended operation away from its base (frequently a larger ship). Many low-end star yachts fall into the courier category.

Type: Ultralight	**Size:** Gargantuan (-4 Size)
Subtype: Courier	**Tactical Speed:** 3,000 ft. (6 sq.)
AC: 11	**Length:** 45 feet
Flat-footed AC: 9	**Weight:** 90,000 lbs.
Autopilot AC: 8	**Targeting System Bonus:** +2
Hardness: 20	**Crew:** 4 (trained +4)
Hit Points: 8d20 (160 HP)	**Passenger Capacity:** 12
Initiative Modifier: +2	**Cargo Capacity:** 9,000 lbs.
½ Pilot Ranks: 3	**Grapple Modifier:** +12
Pilot's Dex Modifier: +2	**Price:** 40,000 GPE
Gunner's Attack Bonus: +2	**License to Purchase:** 5,000 GPE

Attack:

Laser +0 ranged (6d8)

Attack of Opportunity: None

Standard PL 6 Design Specs:

> **Engines:** Ion engine, thrusters
> **Armor:** Polymeric
> **Defense Systems:** Autopilot system, damage control system (1d10)
> **Sensors:** Class II sensor array, targeting system
> **Communications:** Laser transceiver, radio transceiver
> **Weapons:** 1 laser (range incr. 3,000 ft.)
> **Grappling Systems:** Grapplers

Escort (PL 6)

Escorts are a long-range patrol craft employed for various duties including the protection of merchant ships and remote bases. Gunships or missile boats could qualify as escorts.

Type: Ultralight	Size: Colossal (-4 Size)
Subtype: Escort	Tactical Speed: 3,000 ft. (6 sq.)
AC:	Length: 180 feet
Flat-footed AC:	Weight: 900 tons
Autopilot AC:	Targeting System Bonus: +3
Hardness: 30	Crew: 8 (trained +4)
Hit Points: 20d20 (400 HP)	Passenger Capacity: 24
Initiative Modifier: +4	Cargo Capacity: 30 lbs.
½ Pilot Ranks: 3	Grapple Modifier: +16
Pilot's Dex Modifier: +2	Price: 60,000 GPE
Gunner's Attack Bonus: +2	License to Purchase: 10,000 GPE

Attack: 2 fire-linked heavy neutron guns -3 ranged (15d8) and 2 fire-linked rail cannons -8 raged (9d12) and CHE missile -8 (6d12, 19-20/x2)

Attack of Opportunity: Point-defense system +3 ranged (1d12x10)

Standard PL 6 Design Specs:

> **Engines:** Ion engine, thrusters
> **Armor:** Vanadium
> **Defense Systems:** Damage control system (1d10) magnetic field, point-defense system, radiation shielding, sensor jammer
> **Sensors:** Class III sensor array, targeting system
> **Communications:** Laser transceiver, radio transceiver
> **Weapons:** 2 fire-linked heavy neutral guns (range incr. 6,000 ft.), 2 fire-linked rail cannons (range incr. 3,000 ft.), 1 CHE missile launcher (8 missiles)
> **Grappling Systems:** Grapplers

Fast Freighter (PL 6)

A courier is capable of extended operation away from its base (frequently a larger ship). Many low-end star yachts fall into the courier category.

Type: Ultralight	**Size:** Gargantuan (-4 Size)
Subtype: Courier	**Tactical Speed:** 3,000 ft. (6 sq.)
AC: 11	**Length:** 45 feet
Flat-footed AC: 9	**Weight:** 90,000 lbs.
Autopilot AC: 8	**Targeting System Bonus:** +2
Hardness: 20	**Crew:** 4 (trained +4)
Hit Points: 8d20 (160 HP)	**Passenger Capacity:** 12
Initiative Modifier: +2	**Cargo Capacity:** 9,000 lbs.
½ Pilot Ranks: 3	**Grapple Modifier:** +12
Pilot's Dex Modifier: +2	**Price:** 40,000 GPE
Gunner's Attack Bonus: +2	**License to Purchase:** 5,000 GPE

Attack:

Laser +0 ranged (6d8)

Attack of Opportunity: None

Standard PL 6 Design Specs:

> **Engines:** Ion engine, thrusters
> **Armor:** Polymeric
> **Defense Systems:** Autopilot system, damage control system (1d10)
> **Sensors:** Class II sensor array, targeting system
> **Communications:** Laser transceiver, radio transceiver
> **Weapons:** 1 laser (range incr. 3,000 ft.)
> **Grappling Systems:** Grapplers

Designing New Starships

Though one of the simplest ways to create unique starships is to apply a template to a base ship, sometimes you might need to create a new type of starship. These unmodified starships form the basis of most starship types and are used to create general classifications of starships. Most specific starship designs can be created by adding templates to the base starships; though two factions might have drastically different types of assault fighters, in the end they are still assault fighters and are variations on the same theme. However, in the event that a player or Gamemaster wishes to create a new base starship, the following rules allow for this.

The first step is to come up with a concept for the starship. If one of the other base ships already fills that role, a template might work better than creating a whole new starship. However if a new ship type is called for, simply determine the PL of the ship (usually relevant to the campaign) and keep in mind the role and function of the ship before starting. The following instructions will walk you through the starship creation process:

1. Select ship type and size.
2. Determine superstructure.
3. Select armor.
4. Select power core.
5. Determine crew.
6. Determine passenger capacity.
7. Determine life support requirements.
8. Determine cargo capacity.
9. Install hangar bays.
10. Select engines.
11. Select communications and sensors.
12. Select defense systems.
13. Select weapons systems.
14. Select grappling systems.
15. Add any other components.

Size	Price	HD	Min. Crew	Min. Passenger	Max Systems	Defense Systems
Ultralight Ships						
Large	1,000 GPE	1-3	0	4	0-1	0-1
Huge	1,500 GPE	3-6	1	8	1-2	1-2
Gargantuan	2,500 GPE	6-10	1	20	2-3	2-3
Colossal	4,000 GPE	10-20	4	1,000	3-6	3-6
Light Ships						
Gargantuan	10,000 GPE	20-30	4	50	2-3	2-3
Colossal	15,000 GPE	30-80	8	2,000	3-8	3-8
Mediumweight Ships						
Gargantuan	22,000 GPE	50-100	8	100	2-4	2-4
Colossal	35,000 GPE	100-250	8	4,000	4-10	4-10
Heavy Ships						
Gargantuan	40,000 GPE	100-250	16	400	2-5	2-5
Colossal	75,000 GPE	250-800	24	8,000	5-16	5-16
Superheavy Ships						
Colossal	100,000 GPE	800-6,000	40	16,000	5-40	8-60

Ship Type

Determing a starship's type is the first and most important step in the creation process. A starship's type (followed by its size) determines almost every major aspect of its statistics and potential for weapons and defense systems. Many of the rules for ship design found in *d20 Future* are based on starship size, but the relevant sections have been included here for convenience. The starship's creator should determine the ship's type and size first, based on the role that the starship will fill. For suggestions on assigning a ship type and size to the new design, compare the concept to existing ships and determine based on existing designs.

A starship's type and size determines it's Hit Dice, which are given a range listed on the table above. A starship can have any number of Hit Dice that it is qualified for based on its type and size, and the ship's hit points are equal to Hit Dice x 20. It must have a minimum crew to operate and has a maximum passenger capacity based on type and size. A starship's Hit Dice also determine the number of defense systems and weapons systems that it can carry at any given type (though it may have fewer than its maximum). All starships of that type have a set price, which covers all standard components for a ship of that size. Only components that modify the ship cost extra, most other components are purchased and installed separately, and do not affect the price.

Ship Size

Since the ship's size has already been determined as a function of its type, consult the Starship Size table below for specific modifiers and bonuses based on the ship's size.

Starship Size	Starship's Size Modifiers	Targeting System's Bonus	Autopilot System's Bonus	Ship Length	Ship Weight
Large	-1	+0	+0	>16 ft.	1,000 - 4,000 lbs.
Huge	-2	+1	+1	16-32 ft.	4,000 – 32,000 lbs.
Gargantuan	-4	+2	+2	32-64 ft.	32,000 – 250,000 lbs.
Colossal	-8	+3	+3	64+ ft.	250,000+ lbs.

Superstructure

The next important step is determining the starship's superstructure. A superstructure encompasses a wide array of statistics, including Hit Dice, length, and weight. The starship's Hit Dice are based on the ship's type and size; the designer can select any number of Hit Dice within the appropriate range (as dictated on Table: Starship Type). The length is determined based on the ship's physical form, though it must fit within the constraints of its size category. Finally, the starship's weight is based on its size and function; there is no precise method of calculating a ship's weight (size, composition, and interior mechanisms vary too widely), so determine a ship's weight by comparing it to other ships of its size and type.

Armor

The next step in the process is to choose a type of armor. All starships have one type of armor, which is bought and added separately like an individual component. Since most armor types are based on one-half the starship's base price, any character or characters capable of purchasing a starship should also be able to afford even the most expensive types of armor. The starship's armor not only determines the ship's hardness rating, it applies penalties to movement and adds weight to the ship. A starship can have any type of armor appropriate to its PL.