**United States Navy Strike Fighter Tactics Instructor program**

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The patch awarded to NFWS graduates

The **United States Navy Strike Fighter Tactics Instructor program** (**SFTI program**), more popularly known as **Topgun** or **TOPGUN**, teaches fighter and strike tactics and techniques to selected [Naval Aviators](https://en.wikipedia.org/wiki/United_States_Naval_Aviator) and [Naval Flight Officers](https://en.wikipedia.org/wiki/Naval_Flight_Officer), who return to their operating units as surrogate instructors. It began as the **United States Navy Fighter Weapons School**, established on March 3, 1969, at the former [Naval Air Station Miramar](https://en.wikipedia.org/wiki/Marine_Corps_Air_Station_Miramar), north of [San Diego](https://en.wikipedia.org/wiki/San_Diego), [California](https://en.wikipedia.org/wiki/California). In 1996, the School was merged into the [Naval Strike and Air Warfare Center](https://en.wikipedia.org/wiki/Naval_Strike_and_Air_Warfare_Center) at [NAS Fallon](https://en.wikipedia.org/wiki/Naval_Air_Station_Fallon), [Nevada](https://en.wikipedia.org/wiki/Nevada).

**History**

**Genesis**

In 1968, [Chief of Naval Operations](https://en.wikipedia.org/wiki/Chief_of_Naval_Operations) (CNO) [Admiral](https://en.wikipedia.org/wiki/Admiral) [Thomas Hinman Moorer](https://en.wikipedia.org/wiki/Thomas_Hinman_Moorer) ordered Captain [Frank Ault](https://en.wikipedia.org/wiki/Frank_Ault) to research the failings of the U.S. [air-to-air missiles](https://en.wikipedia.org/wiki/Air-to-air_missile) used in combat in the skies over [North Vietnam](https://en.wikipedia.org/wiki/North_Vietnam).[Operation Rolling Thunder](https://en.wikipedia.org/wiki/Operation_Rolling_Thunder), which lasted from 2 March 1965 to 1 November 1968, ultimately saw almost 1,000 U.S. aircraft losses in about one million [sorties](https://en.wikipedia.org/wiki/Sortie). Rolling Thunder became the [*Rorschach test*](https://en.wikipedia.org/wiki/Rorschach_test) for the Navy and Air Force, which drew nearly opposite conclusions. The USAF concluded that its air losses were primarily due to unobserved MiG attacks from the rear, and were therefore a technology problem. The service responded by upgrading its [F-4 Phantom II](https://en.wikipedia.org/wiki/F-4_Phantom_II) fleet, installing an internal [20mm Vulcan](https://en.wikipedia.org/wiki/20mm_Vulcan) cannon (replacing the [gun pods](https://en.wikipedia.org/wiki/Gun_pod) carried under the aircraft's belly by Air Force Phantom units, such as the [366th Tactical Fighter Wing](https://en.wikipedia.org/wiki/366th_Tactical_Fighter_Wing)), developing improved airborne [radar](https://en.wikipedia.org/wiki/Radar) systems, and working to solve the targeting problems of the [AIM-9](https://en.wikipedia.org/wiki/AIM-9) and [AIM-7](https://en.wikipedia.org/wiki/AIM-7) air-to-air missiles.

In May 1968, the Navy published the "[Ault Report](https://en.wikipedia.org/wiki/Ault_Report)", which concluded that the problem stemmed from inadequate air-crew training in [air combat maneuvering](https://en.wikipedia.org/wiki/Air_combat_maneuvering) (ACM). This was welcomed by the [F-8 Crusader](https://en.wikipedia.org/wiki/F-8_Crusader) community, who had been lobbying for an ACM training program ever since Rolling Thunder began. The Ault Report recommended establishment of an "Advanced Fighter Weapons School" to revive and disseminate community fighter expertise throughout the fleet. CNO Moorer concurred.

**Fighter Weapons School**

The United States Navy Fighter Weapons School was established on March 3, 1969, at [NAS Miramar](https://en.wikipedia.org/wiki/NAS_Miramar), California.

The school was formed using many F-8 pilots as instructors, and placed under the control of the [VF-121](https://en.wikipedia.org/wiki/VF-121) "Pacemakers" an [F-4 Phantom](https://en.wikipedia.org/wiki/F-4_Phantom)-equipped [Replacement Air Group (RAG)](https://en.wikipedia.org/wiki/Fleet_Replacement_Squadron) unit. The new school received relatively scant funding and resources, and built its syllabus from scratch. To support its operations, it borrowed aircraft from its parent unit and other Miramar-based units, such as composite squadron [VC-7](https://en.wikipedia.org/wiki/VC-7) and Fighter Squadron One Two Six [VF-126](https://en.wikipedia.org/w/index.php?title=VF-126&action=edit&redlink=1).

Its objective was to develop, refine and teach aerial dogfight tactics and techniques to selected fleet air crews, using the concept of [Dissimilar Air Combat Training](https://en.wikipedia.org/wiki/Dissimilar_air_combat_training), DACT. DACT uses stand-in aircraft to realistically replicate expected enemy aircraft and is widely used in air arms the world over. At that time, the predominant enemy aircraft were the Russian-built transonic [MiG-17 'Fresco'](https://en.wikipedia.org/wiki/Mikoyan-Gurevich_MiG-17) and the supersonic [MiG-21 'Fishbed'](https://en.wikipedia.org/wiki/Mikoyan-Gurevich_MiG-21).

Topgun initially operated the [A-4 Skyhawk](https://en.wikipedia.org/wiki/A-4_Skyhawk) and borrowed USAF [T-38 Talons](https://en.wikipedia.org/wiki/T-38_Talon) to simulate the flying characteristics of the MiG-17 and MiG-21, respectively. The school also made use of [Marine](https://en.wikipedia.org/wiki/United_States_Marine_Corps)-crewed [A-6 Intruders](https://en.wikipedia.org/wiki/A-6_Intruder) and USAF [F-106](https://en.wikipedia.org/wiki/F-106_Delta_Dart) aircraft when available. Later, the T-38 was replaced by the [F-5E and F-5F Tiger II](https://en.wikipedia.org/wiki/F-5_Freedom_Fighter).

One British writer claimed that the early school was influenced by a group of a dozen flying instructors from the [British](https://en.wikipedia.org/wiki/United_Kingdom) [Fleet Air Arm](https://en.wikipedia.org/wiki/Fleet_Air_Arm) aboard [HMS *Ark Royal*](https://en.wikipedia.org/wiki/HMS_Ark_Royal_(R09)), who were graduates of the [Royal Navy](https://en.wikipedia.org/wiki/Royal_Navy)'s intense Air Warfare Instructors School in [Lossiemouth](https://en.wikipedia.org/wiki/RAF_Lossiemouth), [Scotland](https://en.wikipedia.org/wiki/Scotland). However, an earlier incarnation of Topgun, the U.S. Navy Fleet Air Gunnery Units, or FAGU, had provided air combat training for Naval Aviators from the early 1950s until 1960, when a doctrinal shift, brought on by advances in missile, radar and fire control technology, contributed to the belief that the era of the classic dogfight was over, leading to their disestablishment. The pilots who were part of the initial cadre of instructors at Topgun had experience as students from FAGU.



U.S. Navy Fleet Air Gunnery Unit aircraft from [NAF El Centro](https://en.wikipedia.org/wiki/NAF_El_Centro) in the late 1950s

Air crews selected to attend the Topgun course were chosen from front-line units. Upon graduating, these crews would return to their parent fleet units to relay what they had learned to their fellow squadron mates—in essence becoming instructors themselves.

During the halt in the bombing campaign against North Vietnam (in force from 1968 until the early 1970s), Topgun established itself as a center of excellence in fighter doctrine, tactics and training. By the time aerial activity over the North resumed, most Navy squadrons had a Topgun graduate. According to the USN, the results were dramatic. The Navy kill-to-loss ratio against the North Vietnamese Air Force ([NVAF](https://en.wikipedia.org/wiki/VPAF)) MiGs soared from 3.7:1 (1965–1967) to 13:1 (after 1970), while the Air Force, which had not implemented a similar training program, actually had its kill ratio worsen for a time after the resumption of bombing, according to Benjamin Lambeth's *The Transformation of American Airpower.*

The success of the U.S. Navy fighter crews vindicated the fledging DACT school's existence and led to Topgun becoming a separate, fully funded command in itself, with its own permanently assigned aviation, staffing, and infrastructural assets. Successful Topgun graduates who scored air-to-air kills over North Vietnam and returned to instruct included "Mugs" McKeown and Jack Ensch. The first U.S. [aces](https://en.wikipedia.org/wiki/Flying_ace) of the [Vietnam War](https://en.wikipedia.org/wiki/Vietnam_War), [Randy "Duke" Cunningham](https://en.wikipedia.org/wiki/Duke_Cunningham) and [Willie Driscoll](https://en.wikipedia.org/wiki/William_P._Driscoll), received no official Topgun training, but had, during F-4 training with VF-121, flown against Topgun instructors.

It was not until after the war in Vietnam ended that the Air Force initiated a robust DACT program with dedicated aggressor squadrons. The Air Force also initiated a program to replicate an aircrew's first ten combat missions known as [Red Flag](https://en.wikipedia.org/wiki/Red_Flag_(USAF)), and the [United States Air Force Weapons School](https://en.wikipedia.org/wiki/United_States_Air_Force_Weapons_School) also increased emphasis on DACT.



Topgun [F-16N](https://en.wikipedia.org/wiki/F-16_Fighting_Falcon_variants) and [A-4F](https://en.wikipedia.org/wiki/A-4_Skyhawk) aircraft in formation over [Lower Otay Reservoir](https://en.wikipedia.org/wiki/Lower_Otay_Reservoir)

The 1970s and 1980s brought the introduction of the [F-14 Tomcat](https://en.wikipedia.org/wiki/F-14_Tomcat) and the [F/A-18 Hornet](https://en.wikipedia.org/wiki/F/A-18_Hornet) as the primary Fleet fighter aircraft flown by students, while Topgun instructors retained their A-4s and F-5s, but also added the [F-16 Fighting Falcon](https://en.wikipedia.org/wiki/F-16_Fighting_Falcon) to better simulate the threat presented by the [Soviet Union](https://en.wikipedia.org/wiki/Soviet_Union)'s new 4th-generation [MiG-29 'Fulcrum'](https://en.wikipedia.org/wiki/Mikoyan_MiG-29) and [Su-27 'Flanker'](https://en.wikipedia.org/wiki/Sukhoi_Su-27) fighters. However, the specially built F-16N developed cracks in the airframe and was retired.

Largely due to the end of the [Cold War](https://en.wikipedia.org/wiki/Cold_War) in the 1990s, the Topgun syllabus was modified to include more emphasis on the air-to-ground strike mission as a result of the expanding multi-mission taskings of the F-14 and F/A-18. In addition, Topgun retired their A-4s and F-5s in favor of F-16s and F/A-18s in the Aggressor Squadron.

**Transfer to NSAWC**

In 1996, the transfer of [NAS Miramar](https://en.wikipedia.org/wiki/NAS_Miramar) to the [Marine Corps](https://en.wikipedia.org/wiki/United_States_Marine_Corps) was coupled with the incorporation of Topgun into the [Naval Strike and Air Warfare Center](https://en.wikipedia.org/wiki/Naval_Strike_and_Air_Warfare_Center) (NSAWC) at [NAS Fallon](https://en.wikipedia.org/wiki/NAS_Fallon), Nevada.

In 2002, the Navy began to receive 14 F-16A and B models from the Aerospace Maintenance and Regeneration Center (AMARC) that were originally intended for Pakistan before being embargoed. These aircraft (which are not designated F-16N/TF-16N) are operated by the Naval Strike and Air Warfare Center (NSAWC) for adversary training and, like their F-16N predecessors, are painted in exotic schemes.

Topgun instructors currently fly the F/A-18A/B/C/D/E/F Hornet and Super Hornet as well as the undelivered Pakistani F-16A/B Fighting Falcon.

**Course**



Unofficial NFWS patch with F-5 planform

Topgun conducts four "Power Projection" classes a year. Each class lasts nine weeks and consists of nine Navy and Marine Corps [strike fighter](https://en.wikipedia.org/wiki/Strike_fighter) aircraft—a mix of single-seat [F/A-18](https://en.wikipedia.org/wiki/F/A-18)Cs and Es, and two-seat F/A-18Ds and Fs. The Topgun course is designed to train already experienced Navy and Marine Corps aircrews at the graduate level (although it is currently not a regionally or nationally accredited educational program) in all aspects of strike-fighter aircraft employment, which includes tactics, hardware, techniques and the current world threat for air-to-air and air-to-ground missions. The course includes eighty hours of lectures and twenty-five flights that pit students against Topgun instructors. When a pilot or WSO completes the Topgun course he/she will return as a Training Officer carrying the latest tactical doctrine back to their operational squadron, or go directly to an FRS squadron to teach new aircrews. SFTIs can also become instructors themselves at Topgun later in their career. Each year, a small number of aircrews do not meet Topgun's standards and are dropped from the course.

Topgun trains four to six Air Intercept Controllers in each class on advanced command, control, and combat communication skills. They are completely integrated in the course and participate in most of the training missions. These "AIC" students, some of whom are E-2C Hawkeye Naval Flight Officers, go back to their Carrier Air Wings after graduation and are given the responsibility of training all the air controllers and fighters in their Carrier Strike Groups in the art of air intercept control.

Topgun also conducts an Adversary Training Course, flying with adversary aircrew from each Navy and Marine Corps adversary squadron. These pilots receive individual instruction in threat simulation, effective threat presentation and adversary tactics. Topgun provides academics and flight training to each Carrier Air Wing during their Integrated and Advanced Training Phases (ITP/ATP) at NAS Fallon which are large scale exercises that can involve as many as fifty aircraft. These large scale exercises serve as "dress rehearsals" for future combat scenarios. In addition to training crews, Topgun also conducts ground school courses six times a year. The Training Officer Ground School (TOGS) offers graduate level academics to Fleet aviators, adversary instructors and other officers and enlisted personnel.

Topgun holds a Strike-Fighter Tactics Refresher Course (also known as "Re-Blue") once a year, usually in the fall, bringing current fleet SFTIs back to Fallon for a two-day refresher, updating Topgun's recommendations.

The Topgun course has changed over time. In the 1970s, it was four weeks long; in the 1980s, five weeks. The final F-4 Phantoms went through the class in March 1985, and the final F-14 Tomcats in October 2003. Programs formerly run by Topgun that have been transferred to other commands or discontinued include Fleet Air Superiority Training (FAST) and Hornet Fleet Air Superiority Training (HFAST): coordinated programs of academics and simulators, training fighter pilots and WSOs in Maritime Air Superiority in the carrier group arena.

**Similar schools**

The [Naval Strike and Air Warfare Center](https://en.wikipedia.org/wiki/Naval_Strike_and_Air_Warfare_Center) at NAS Fallon is the Navy center of excellence for naval strike and air warfare and is commanded by an admiral. Topgun is a department (N7) under NSAWC, as are several other formerly independent weapons schools: the Carrier Airborne Early Warning Weapons School ( or CAEWWS pronounced cause), JTAC (run by SEALs), "Strike U" (N5), Airborne Electronic Attack (Callsign HAVOC), and Maritime Weapons Schools. Additional schools reside at the Master Jet bases and designated as Type Wing Weapons Schools such as the Strike Fighter Weapons Schools at NAS Lemoore and NAS Oceana. Instructors and curriculum at these schools support the locally based squadrons and conduct unit-level training. NSAWC conducts training for individual aviators, as at Topgun, as well as Air Wing-level training. NSAWC provides standardization for the entire Weapon School community and sets standards and criteria for individual qualification.

**US Air Force**

Since 1949, the [United States Air Force](https://en.wikipedia.org/wiki/United_States_Air_Force) has operated a similar training program at the [United States Air Force Weapons School](https://en.wikipedia.org/wiki/United_States_Air_Force_Weapons_School) (formerly called the "United States Air Force Fighter Weapons School" and the "Aircraft Gunnery School"), and conducts large-scale tactical training exercises (see [Red Flag](https://en.wikipedia.org/wiki/Red_Flag_(USAF))) at [Nellis Air Force Base](https://en.wikipedia.org/wiki/Nellis_Air_Force_Base), [Nevada](https://en.wikipedia.org/wiki/Nevada). Whereas the Navy's Top Gun program is 9 weeks long, the US Air Force Weapons School program is five and a half months long. The program includes nearly every type of aircraft in the Air Force inventory as well as courses focused on [intelligence](https://en.wikipedia.org/wiki/AFISRA), command and control, space and cyber operations.

**US Marine Corps**

The Marine Corps operates Marine Aviation Weapons & Tactics Squadron – One (MAWTS-1) at [Marine Corps Air Station Yuma](https://en.wikipedia.org/wiki/Marine_Corps_Air_Station_Yuma) with an Adversary squadron, [VMFT-401](https://en.wikipedia.org/wiki/VMFT-401), co-located at the base. MAWTS provides training for qualification of individual Weapons & Tactics Instructors (WTI) that return to their squadrons as experts in employment of the aircraft and its weapons systems. MAWTS conducts large scale exercises several times a year called "WTI" evolutions that are similar to Red Flag or NSAWC Air Wing training and involve all aircraft operated by the Marine Corps.

**Argentina**

The [Argentine Air Force](https://en.wikipedia.org/wiki/Argentine_Air_Force) trains its fighter pilots in the CEPAC (Course Combat Airman Standardization) course given at the IV Air Brigade in the town of "El Plumerillo" located in the province of [Mendoza](https://en.wikipedia.org/wiki/Mendoza_Province). The officers that graduate from Military Aviation School receive advanced academic instruction and flight training in the [AT-63](https://en.wikipedia.org/wiki/FMA_IA_63_Pampa#AT-63_Pampa) "Pampa" aircraft, and then join some of the operational squadrons of the Air Force.

**Canada**

[410 Squadron](https://en.wikipedia.org/wiki/No._410_Squadron_RCAF) of the [Royal Canadian Air Force](https://en.wikipedia.org/wiki/Royal_Canadian_Air_Force) conducts an annual Fighter Weapons Instructor Course (FWIC) at [CFB Cold Lake](https://en.wikipedia.org/wiki/CFB_Cold_Lake) in [Alberta](https://en.wikipedia.org/wiki/Alberta). The course is three months in length and is specific to the [CF-18 Hornet](https://en.wikipedia.org/wiki/CF-18_Hornet) aircraft. There are eight students per course.

**Greece**

The [Hellenic Air Force](https://en.wikipedia.org/wiki/Hellenic_Air_Force) built its own school in 1975. The school was called Tactical Weapons School and is based in [Andravida](https://en.wikipedia.org/wiki/Andravida) Air Base. In 1983 Hellenic Air Force established the KE.A.T. which means in Greek, Air Tactics Centre. Now the Tactical Weapons School is part of the KE.A.T. and are both based in [Andravida](https://en.wikipedia.org/wiki/Andravida) acting as an independent squadron of the [Hellenic Air Force](https://en.wikipedia.org/wiki/Hellenic_Air_Force). Every year the best pilots from all the squadrons of the [Hellenic Air Force](https://en.wikipedia.org/wiki/Hellenic_Air_Force), are trained in KE.A.T. in modern Air To Air Tactics, Air To Ground Tactics, COMAO packages and Electronic Warfare. The pilots which graduating from the KE.A.T. are the best pilots in the [Hellenic Air Force](https://en.wikipedia.org/wiki/Hellenic_Air_Force).

**Netherlands**

The [Royal Netherlands Air Force](https://en.wikipedia.org/wiki/RNLAF) has a Fighter Weapons Instructor Training (FWIT) with 323 Tactical Training, Evaluation & Standardization Squadron (TACTESS) at Leeuwarden Airbase. This training is a multi-national effort with Norway, Denmark, Belgium and Portugal.

**Pakistan**

The [Pakistan Air Force](https://en.wikipedia.org/wiki/Pakistan_Air_Force) initially provided similar training via the fighter leaders school but this was replaced by the dedicated Combat Commanders School at [PAF Base Mushaf](https://en.wikipedia.org/wiki/PAF_Base_Mushaf) in 1976. The Combat Commanders' School continues to fulfil its mission of training fighter pilots and air defense controllers. In order to keep pace with the ever changing aerial threat and environment, CCS reviews its courses content continually. New study and flying phases involving EW and BVR threat have been added along with counter-insurgency tactics and others augmented to maintain pace with current Air warfare trends.

**Turkey**

[Turkish Air Force](https://en.wikipedia.org/wiki/Turkish_Air_Force) has a similar training program which is given in air-to-air and air-to-ground simulated warfare conditions based on highly developed ACMI (Air Combat Maneuvering Instrumentation) system, named [Anatolian Eagle](https://en.wikipedia.org/wiki/Anatolian_Eagle). Each year several countries participate in operations, including Belgium, France, Germany, Israel, Italy, Jordan, Netherlands, United Arab Emirates, United Kingdom and United States of America.

Located in Konya 3rd. Main Jet Base, the main missions of the program include: to systematically test and evaluate the fighters' combat readiness statuses and to manage the tactical training progress, to build a background and knowledge base in order to make research on tactical aeronautics, to make research to allow fighter elements of the Turkish Air Force Command to reach the military goals in the shortest time and with minimum resource and effort, to support the definition of operational requirements and supply and R&D activities, to allocate training environment in order to fulfill the requirements of the Turkish Air Force Command, to support the tests of existing/developed/future weapon/aircraft systems.

**United Kingdom**

The [Royal Air Force](https://en.wikipedia.org/wiki/Royal_Air_Force) and [Royal Navy](https://en.wikipedia.org/wiki/Royal_Navy) also has a similar course specific to each aircraft type, known as the [QWI](https://en.wikipedia.org/wiki/Qualified_Weapons_Instructor) (Qualified Weapons Instructor, pronounced Que-Why) Course. It is five months in length.

**Russia**

The [Russian Air Force](https://en.wikipedia.org/wiki/Russian_Air_Force) also has its own specialty course in modern air-to-air and air-to-ground combat. Called the [4th Center of Combat Application and Conversion of Frontline Aviation](https://en.wikipedia.org/w/index.php?title=4th_Center_of_Combat_Application_and_Conversion_of_Frontline_Aviation&action=edit&redlink=1), it is based at [Lipetsk Air Base](https://en.wikipedia.org/wiki/Lipetsk_Air_Base) and under the command of General-Major Aleksander Kharchevsky. Lipetsk today has many of the old, current, and new Russian Air Force hardware, including the [Sukhoi Su-34](https://en.wikipedia.org/wiki/Sukhoi_Su-34) and [Yakovlev Yak-130](https://en.wikipedia.org/wiki/Yakovlev_Yak-130). Once the [T-50](https://en.wikipedia.org/wiki/Sukhoi_T-50) [PAK-FA](https://en.wikipedia.org/wiki/PAK-FA) [fifth generation fighter](https://en.wikipedia.org/wiki/Fifth_generation_fighter) will come into service, the first ten series production copies will be sent to Lipetsk for training of instructors. The new [Sukhoi Su-35](https://en.wikipedia.org/wiki/Sukhoi_Su-35) will also be used for training for the new aircraft, as well as the T-50.

**Popular Culture**

Topgun was made famous by the 1986 motion picture [*Top Gun*](https://en.wikipedia.org/wiki/Top_Gun)*,* starring [Tom Cruise](https://en.wikipedia.org/wiki/Tom_Cruise).

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