FIRST® Tech Challenge
Links & Resources

GENERAL KNOWLEDGE

FTC Tutorials
http://ftctutorials.com/
Created by the Seshan Brothers of FRC 8027, this is an excellent starting point for information on a wide variety of topics, including robot building, programming and competitions.

Game Manual Zero
https://gm0.copperforge.cc/en/stable/index.html
This unofficial manual is targeted towards new teams and covers a variety of topics, especially many of the technical topics that intimidate newcomers.

Wizards.exe (FTC 9794) Spellbooks (instructional videos)
https://wizards-exe.weebly.com/our-spellbooks.html
The website by FTC 9794 – Wizards.exe has many instructional videos, ranging from CAD to wiring to robot "vision."

COLLABORATION

FIRST® Tech Challenge Forum (official)
https://ftcforum.usfirst.org/
The official FIRST forum for the *FIRST*® Tech Challenge program.

FIRST® Nevada Team Discussion Forum
http://www.firstnevada.org/discussion_forum.aspx
Forum for Nevada teams to collaborate, ask questions and share ideas.

FTC Share & Learn Facebook Group
https://www.facebook.com/groups/FTCShareAndLearn/
Much like its FLL counterpart, this is a fantastic place to post questions and get feedback some of the top teams, coaches mentors and volunteers.

FTC TEC Network
http://www.ftctecnetwork.org/
Long-running private Google+ community.

FIRST® Tech Challenge on Reddit
https://www.reddit.com/r/FTC/
FTC board on popular Reddit website.

ROBOT DESIGN

Brainstormers (FTC 8644) — Tips & Tricks Videos
https://www.youtube.com/channel/UCtm7Wijmxe6n85tDQIQUAwg
Many video tutorials on collection systems, linear slides, etc.

Wizards.exe (FTC 9794) — The Basics of REV
https://www.youtube.com/watch?v=7_fiFWus0xE
A very simple video introduction to building with the REV system, which is fairly different from other systems (Tetrix, Actobotics, etc.).

PROGRAMMING

Learn Java
https://www.learnjavaonline.org/
Basic introduction to Java concepts, including a "live" interactive output screen for testing code techniques.

STEM Robotics 201 - Java for Robots
http://stemrobotics.cs.pdx.edu/node/4196
A great tutorial for FIRST Tech Challenge teams as it focuses on Java being used for robotics.

Java Tutorial for Complete Beginners (Udemy)
https://www.udemy.com/java-tutorial/
This is a free tutorial with the basics; Udemy offers additional paid tutorials.

Java Tutorial (TutorialsPoint)
https://www.tutorialspoint.com/java/
Text-based, but easy to follow.

Java Tutorial for Beginners: Learn in 7 Days
https://www.guru99.com/java-tutorial.html
Some of the topics are a bit programmer-oriented (i.e., beyond the scope of programming for FIRST Tech Challenge), but the explanations are good.

Java Tutorial (SoloLearn)
https://www.sololearn.com/Course/Java/
A free tutorial (required account / sign in, though); not interactive, but it includes quizzes.

Essentials of the Java Programming Language (Oracle)
Part 1: http://www.oracle.com/technetwork/java/basicjava1-135508.html
Part 2: http://www.oracle.com/technetwork/java/basicjava2-138746.html
Guides from the official source for Java; however, they are focused more on app development than general and/or robotics usage.

ROBOTICS PARTS SUPPLIERS

Note: Most of the sites below sell parts for many different robotics competitions and hobbyist pursuits. You need to make sure a part is legal before purchasing it.

Actobotics (ServoCity)
https://www.servocity.com/actobotics
In addition to the Actobotics line of robotics parts, ServoCity has many parts that may prove useful in building a robot.

AndyMark
https://www.andymark.com/pages/first-tech-challenge
Beyond robotics parts, AndyMark also is the official vendor for purchasing the season field kit.

goBILDA
https://www.gobilda.com/
A relative newcomer, their linear slide kit and FTC legal linear actuators already have proven competition-ready.

PITSCO
https://www.pitsco.com/Competitions-Clubs-and-Programs/FIRST-Tech-Challenge
Primarily known for their TETRIX building system and TorqueNADO motors, as well as the entity you pay your FIRST season fee to.

REV Robotics
https://www.revrobotics.com/ftc/
They are the supplier of the only legal control system for FTC (Expansion Hub, and now the newly FTC-legal Control Hub).

GENERAL HARDWARE SUPPLIERS

SDP/SI
https://sdp-si.com/
When you are ready to expand beyond the stock parts that come in the kits, this site provides lots of useful and interesting parts that can be used on the robot.

Grainger
https://www.grainger.com/
This site has lots of basic building blocks, including things like sheet metal. Also, you can buy nuts and bolts (screws) compatible with the various kit system in bulk.

RECOMMENDED PARTS

ServoBlocks™
https://www.servocity.com/servos/servoblocks
Helps secure servos and makes them much more stable.

Aluminum Motor Mount B
https://www.servocity.com/aluminum-motor-mount-b
Helps secure motors.

Side Tapped Pattern Mount C
https://www.servocity.com/90-quad-hub-mount-c
Referred to as the "Magic Bracket" by teams, this is an excellent part to assist in mounting motors in a stable and secure fashion.

RECOMMENDED TOOLS

Roboplex — Hardware, Tools and Tips
http://roboplex.org/ftc/ftc-tools-tips-2/
This site has many resources, including this comprehensive list of recommended tools.

MISCELLANEOUS

FIRST® Fundraising Toolkit

https://www.firstinspires.org/resource-library/fundraising-toolkit

This site curates information, presentations and examples from various FIRST teams on how to raise money.

Discord

https://discord.com/

Discord can be a useful (and free!) team collaboration tool, with the ability to create separate "rooms" (think of team functions/tasks, such as robot, programming, outreach, etc). For school-based teams, you may need to confirm that your district and/or school allow use of Discord. If set up properly, however, it can be made very private with the ability for adults (coaches) to moderate activity and assign roles to participants.

Codenames

https://codenames.cards/

Codenames is a board game that was converted into an open-source online game. It can be a fun team-building activity for team members, and it can be done in-person or remotely.