**TI STEM and Coding Resources: Getting Started and Beyond**

**TI-Nspire CXII Python using TI-Innovator Hub, TI-Rover, microbit, Tello Drone and more**

See [link](https://resources.tistemprojects.com/tistemprojects-home?resource_id=3555)

**Getting Started with TI-Nspire CXII Python**

* Overview of TI-Nspire CXII (video from Digital Mood Ring project) [link](https://www.youtube.com/watch?v=nSiCl9g4fNM)
* Write your first Python program on TI-Nspire CXII (video) [link](https://www.youtube.com/watch?v=eodjfPgQjpY)
* **Meet the TI-Innovator Hub** [link](https://resources.tistemprojects.com/tistemprojects-home?resource_id=3605)
* **Meet the Rover** [link](https://resources.tistemprojects.com/tistemprojects-home?resource_id=3485)
* 10 Minutes of Code for Python  [link](https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii/10-minutes-ti-nspire)
  + Unit 1: Getting Started with Python

* [10 Minutes of Code for Python](https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Feducation.ti.com%2Fen%2Factivities%2Fti-codes%2Fpython%2Fnspire%2520%250d10&data=04%7C01%7Cconchita.england%40acboe.net%7Cff41f4b3a71349184ae208d9a9d5c6a1%7C95906bbc973947fc9c7faf193d7e5c12%7C0%7C0%7C637727557928885500%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000&sdata=Pb5yIJlMHifaSAHA1xcSr5tHk2JgIDzxGu7qWsBnsv4%3D&reserved=0" \t "_blank" \o "https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Feducation.ti.com%2Fen%2Factivities%2Fti-codes%2Fpython%2Fnspire%2520%250d10&data=04%7C01%7Cconchita.england%40acboe.net%7Cff41f4b3a71349184ae208d9a9d5c6a1%7C95906bbc973947fc9c7faf193d7e5c12%7C0%7C0%7C637727557928885500%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000&sdata=Pb5yIJlMHifaSAHA1xcSr5tHk2JgIDzxGu7qWsBnsv4%3D&reserved=0)with TI-Innovator Hub and Rover [link](https://education.ti.com/en/activities/ti-codes/python/nspire/10-minutes-innovator)
  + Unit 1: Getting Started with Python and TI-Innovator Hub
  + Unit 4: Rover’s Driving Features
* **Introduction to TI-Nspire Teacher Software (video)** [link](https://youtu.be/KfH9oHNcwBo)

**TI-Rover Projects and Activities**

* **Meet the Rover** [link](https://resources.tistemprojects.com/tistemprojects-home?resource_id=3485)
* **Rover, Watch Out for Rover** [link](https://resources.tistemprojects.com/tistemprojects-home?resource_id=3296)
* **On-Ramp to Robotics: Unit 1 Motion Mars Challenge** [link](https://resources.tistemprojects.com/tistemprojects-home?resource_id=3382)
* **Math in Motion Lessons** [link](https://education.ti.com/en/activities/innovator/math)
  + Move the Cone
  + Navigate “Math-hattan” Challenge
  + Drive the Line Challenge
  + Driving Inequalities Challenge
* **Rover, Escape the room** [link](https://resources.tistemprojects.com/tistemprojects-home?resource_id=3654)
* [**10 Minutes of Code for Python**](https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Feducation.ti.com%2Fen%2Factivities%2Fti-codes%2Fpython%2Fnspire%2520%250d10&data=04%7C01%7Cconchita.england%40acboe.net%7Cff41f4b3a71349184ae208d9a9d5c6a1%7C95906bbc973947fc9c7faf193d7e5c12%7C0%7C0%7C637727557928885500%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000&sdata=Pb5yIJlMHifaSAHA1xcSr5tHk2JgIDzxGu7qWsBnsv4%3D&reserved=0)**with TI-Innovator Hub and Rover** [link](https://education.ti.com/en/activities/ti-codes/python/nspire/10-minutes-innovator)
  + Unit 4: Rover’s Driving Features
  + Unit 5: Rover’s Sensors
  + Unit 6: Coordinates with Rover
* **STEM Event TI-Innovator Hub and Rover activities** [link](https://resources.tistemprojects.com/tistemprojects-home/?resource_id=2986)

**Note:** See the project pages to download teacher background PDF’s, student handouts, Teacher TI-Nspire files with example programs and student TI-Nspire files with scaffolding of the project.

**Turtle Python Module (no additional equipment required)**

* Overview of the Python Turtle module [link](https://education.ti.com/en/product-resources/turtle-module/nspire-python)
  + Includes Python module installation information
* 10 Minutes of Code for Python Modules: Turtle Graphics [link](https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii/python-modules)

**Mathematics and Computer Science Projects**

* [**Explorations**](https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Feducation.ti.com%2Fen%2Factivities%2Fti-codes%2Fpython%2Fnspire%2520%250d10&data=04%7C01%7Cconchita.england%40acboe.net%7Cff41f4b3a71349184ae208d9a9d5c6a1%7C95906bbc973947fc9c7faf193d7e5c12%7C0%7C0%7C637727557928885500%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000&sdata=Pb5yIJlMHifaSAHA1xcSr5tHk2JgIDzxGu7qWsBnsv4%3D&reserved=0) **with Coding (Math Projects)** [link](https://education.ti.com/en/timathnspired/us/explorations-with-coding/coding-with-python)

**Connectivity Software**

* **TI-Nspire CXII Connect Chrome Browser Web app** (no installation necessary) to download and upload files, take screen snapshots and upgrade OS [link](https://nspireconnect.ti.com/#/)

**TI-Innovator Hub Projects and Activities**

**Smart System Projects**

* **Digital Mood Ring** [link](https://education.ti.com/en/activities/stem-projects/digital-mood-ring-python)
* includes step-by-step student videos [link](https://education.ti.com/en/activities/stem-projects/digital-mood-ring-python/videos?category-2)
* includes student and teacher TI-Nspire file and student handouts [link](https://education.ti.com/en/activities/stem-projects/digital-mood-ring-python/downloads)
* student assignment links and PDF’s [link](https://education.ti.com/en/activities/stem-projects/digital-mood-ring-python/assignments)
* Mood Ring Project Versions
  + 1-Hour Quick version [link](https://education.ti.com/en/activities/stem-projects/digital-mood-ring-python/videos?category-3)
  + 4-Hour Coding Focused [link](https://education.ti.com/en/activities/stem-projects/digital-mood-ring-python/videos?category-2)
  + 6-Hour Science and Coding Focused [link](https://education.ti.com/en/activities/stem-projects/digital-mood-ring-python/videos?category-1)
* **Four-Chambered Heart** [link](https://resources.tistemprojects.com/tistemprojects-home?resource_id=3480)
  + Download Heart Build Sheet PDF [link](https://education.ti.com/en/~/media/5c8e40a17dab454bb039f4cd563bed71.ashx?h=16&thn=1&w=16&rev=e526f9bc-e985-4454-9ce6-ed2a52a838d3)
* **Smart Irrigation Project** [link](https://resources.tistemprojects.com/tistemprojects-home?resource_id=3385)
  + Blog Post from US Teacher [link](https://education.ti.com/en/bulletinboard/2022/smartwater)
  + Demonstration video by TI STEM Team [link](https://www.youtube.com/watch?v=U3Nf_9xvWEs)
  + Video from High School in Portugal [link](https://www.youtube.com/watch?v=afvYR8WNTbI)
* **Pet Car Alarm Project** [link](https://resources.tistemprojects.com/tistemprojects-home?resource_id=3477)
  + Demonstration video by TI STEM Team [link](https://youtu.be/0EguJwSzcDQ)
* **Some Like it Tepid** [link](https://resources.tistemprojects.com/tistemprojects-home?resource_id=3413)
* **Coding the Sounds of Music** [link](https://education.ti.com/en/activities/stem-projects/making-music-with-code)
* includes step-by-step student videos [link](https://education.ti.com/en/activities/stem-projects/making-music-with-code/videos)
* includes student and teacher TI-Nspire files downloads and student handouts [link](https://education.ti.com/en/activities/stem-projects/making-music-with-code/downloads)
* student assignment links and PDF’s [link](https://education.ti.com/en/activities/stem-projects/making-music-with-code/assignments)
* Project Versions
  + 1.5 Hour Quick version [link](https://education.ti.com/en/activities/stem-projects/making-music-with-code/videos?category-3)
  + 3-Hour Coding Focused [link](https://education.ti.com/en/activities/stem-projects/making-music-with-code/videos?category-2)

4-Hour Music and Science full version [link](https://education.ti.com/en/activities/stem-projects/making-music-with-code/videos?category-1)

* **STEM Event TI-Innovator Hub and Rover activities** [link](https://resources.tistemprojects.com/tistemprojects-home/?resource_id=2986)

**Microbit Resources**

* Overview of the Microbit with TI Python [link](https://education.ti.com/en/product-resources/microbit)
  + Includes Python module installation information
  + Includes TI microbit Hex file information
* 10 Minutes of Code Python [link](https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii/python-modules)
  + Micro:bit unit 6
* Microbit.org Python activities\* [link](https://microbit.org/projects/make-it-code-it/?filters=python)
  + \*The TI-Nspire CXII microbit Python module supports these activities.

**Tello Drone**

* Overview of the Tello Drone module and equipment [link](https://education.ti.com/en/product-resources/tello-drone)
  + Includes Python module installation information
  + Includes equipment set up information
* 10 Minutes of Code for Python Modules: Tello Drone unit Coming Summer 2023
* Microbit.org Python activities\* [link](https://microbit.org/projects/make-it-code-it/?filters=python)
  + \*The TI-Nspire CXII microbit Python module supports these activities.

**Wonder Workshop Dash Robotic Vehicle**

* Overview of the Dash with TI Python [link](https://education.ti.com/en/product-resources/dash)
* Meet the Dash with TI-Nspire CXII Python [link](https://resources.tistemprojects.com/tistemprojects-home/?resource_id=3617)
* Rover, Watch out for Dash [link](https://resources.tistemprojects.com/tistemprojects-home/?resource_id=3619)

**Other Resources**

* **TI Codes Lessons and Resources** [link](https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii)
  + 10 Minutes of Code for Python [link](https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii/10-minutes-ti-nspire)
  + 10 Minutes of Code for Python TI-Innovator and Rover [link](https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii/10-minutes-innovator)
    - RGB Array Unit 7
  + 10 Minutes of Code for Python Modules [link](https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii/python-modules)
  + 10 Minutes of Code Teacher’s Lounge [link](https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii/teacher-lounge)
    - Download student handouts
    - See curriculum alignments
* **Path to STEM Projects** [link](https://education.ti.com/en/activities/stem/path-to-stem/nspire-cx)
  + TI-Innovator Hub and breadboard engineering and coding activities that explore analog and digital inputs and outputs, calibration and a feedback and control system
* **Science through Engineering Design** [link](https://education.ti.com/en/tisciencenspired/us/stem)
  + No coding required Middle School projects using the TI-Innovator Hub, motors and sensors
  + Exploring the depths with uniform motion [link](https://education.ti.com/en/tisciencenspired/us/detail?id=A10A67CC44644D5D92DC397D53FC0446&t=B268ACA7F7784C21A85AB3F7166C933A)
  + One small bite for man [link](https://education.ti.com/en/tisciencenspired/us/detail?id=3B474B653CEA4CB7A623D8246BB856E0&t=B268ACA7F7784C21A85AB3F7166C933A)
  + One small leaf for mankind [link](https://education.ti.com/en/tisciencenspired/us/detail?id=0CD8F1BF343142319047B3A54488D239&t=B268ACA7F7784C21A85AB3F7166C933A)
* **Learning to Code with Python Using TI-Nspire CXII Technology (On Demand Webinars)**
  + Part 1 [link](https://education.ti.com/en/professional-development/for-teachers-and-teams/online-learning/on-demand-webinars/2021/mar-24-2021-learning-to-code-with-python-nspire-1)
  + Part 2 [link](https://education.ti.com/en/professional-development/for-teachers-and-teams/online-learning/on-demand-webinars/2021/may-19-2021-learning-to-code-with-python-nspire-2)
  + Part 3 [link](https://education.ti.com/en/professional-development/for-teachers-and-teams/online-learning/on-demand-webinars/2021/july-14-2021-learning-to-code-with-python-nspire-3)