TI STEM and Coding Resources: Getting Started and Beyond

TI-Nspire CXII Python using TI-Innovator Hub, TI-Rover, microbit 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) https://www.youtube.com/watch?v=nSiCl9g4fNM
- Write your first Python program on TI-Nspire CXII (video) https://www.youtube.com/watch?v=eodjfPgQjpY
- **Meet the TI-Innovator Hub** https://resources.tistemprojects.com/tistemprojects-home?resource_id=3605
- **Meet the Rover** https://resources.tistemprojects.com/tistemprojects-home?resource_id=3485
- 10 Minutes of Code for Python Unit 1: Getting Started with Python https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii/10-minutes-ti-nspire
- 10 Minutes of Code for Python with Hub and Rover do unit 1:Hub and 4:Rover https://education.ti.com/en/activities/ti-codes/python/nspire/10-minutes-innovator

TI-Innovator Hub Projects and Activities

Smart System Projects

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

- **Coding the Sounds of Music** https://education.ti.com/en/activities/stem-projects/making-music-with-code
  - includes step-by-step student videos https://education.ti.com/en/activities/stem-projects/making-music-with-code/videos
  - includes student and teacher TI-Nspire files downloads and student handouts https://education.ti.com/en/activities/stem-projects/making-music-with-code/downloads
  - student assignment links and PDF's https://education.ti.com/en/activities/stem-projects/making-music-with-code/assignments
  - Project Versions
    - 1.5 Hour Quick version https://education.ti.com/en/activities/stem-projects/making-music-with-code/videos?category-3
    - 3-Hour Coding Focused https://education.ti.com/en/activities/stem-projects/making-music-with-code/videos?category-2
      4-Hour Music and Science full version https://education.ti.com/en/activities/stem-projects/making-music-with-code/videos?category-1
- **STEM Event TI-Innovator Hub and Rover activities** https://resources.tistemprojects.com/tistemprojects-home/?resource_id=2986

TI-Rover Projects and Activities

- **Meet the Rover** https://resources.tistemprojects.com/tistemprojects-home?resource_id=3485
- **Rover, Watch Out for Rover** https://resources.tistemprojects.com/tistemprojects-home?resource_id=3296
- **On-Ramp to Robotics: Unit 1 Motion Mars Challenge** https://resources.tistemprojects.com/tistemprojects-home?resource_id=3382
- **Math in Motion Lessons** https://education.ti.com/en/activities/innovator/math

- **STEM Event TI-Innovator Hub and Rover activities** 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.

Microbit Resources

- Learn about the Microbit with TI Python https://education.ti.com/en/teachers/microbit
  - Includes Python module installation information
  - Includes TI microbit Hex file information
- 10 Minutes of Code Python Unit 6: microbit https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii/10-minutes-ti-nspire
- Microbit.org Python activities* https://microbit.org/projects/make-it-code-it/?filters=python
  - *The TI-Nspire CXII microbit Python module supports these activities.

Turtle Python Module

- Learn about the Python Turtle module 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 https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii/python-modules

Connectivity to handhelds

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

Other Resources

- **TI Codes Lessons and Resources** https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii
  - 10 Minutes of Code for Python 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 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 https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii/python-modules
  - 10 Minutes of Code Teacher's Lounge https://education.ti.com/en/activities/ti-codes/python/ti-nspire-cx-ii/teacher-lounge
    - Download student handouts
    - See curriculum alignments

- **Explorations with Coding (Math Projects)** https://education.ti.com/en/timathnspired/us/explorations-with-coding/coding-with-python

- **Path to STEM Projects**, TI-Innovator Hub and breadboard engineering and coding activities that explore analog and digital inputs and outputs, calibration and a feedback and control system. https://education.ti.com/en/activities/stem/path-to-stem/nspire-cx

- **Science through Engineering Design**, No coding required Middle School projects using the TI-Innovator Hub, motors and sensors https://education.ti.com/en/tisciencenspired/us/stem
  - Exploring the depths with uniform motion https://education.ti.com/en/tisciencenspired/us/detail?id=A10A67CC44644D5D92DC397D53FC0446&t=B268ACA7F7784C21A85AB3F7166C933A
  - One small bite for man https://education.ti.com/en/tisciencenspired/us/detail?id=3B474B653CEA4CB7A623D8246BB856E0&t=B268ACA7F7784C21A85AB3F7166C933A
  - One small leaf for mankind 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 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 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 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