



**MANUAL MODEL**

- Nurbs Modeling
  - Official command guide This grey website with command videos. When you google "rhino + (command name)"
  - Official user guide
- General Modeling

- Animation
  - Bongo OFFICIAL TUTORIAL
- Paneling
  - Paneling Tool
  - Evolute Tools \$\$\$
- Landscape Modeling
  - Land Design
- Architecture Modeling
  - Visual ARQ(BIM)
  - Section Tools
  - rhinoVAULT
- Detail Modeling (Sculpting)
  - Tspline (discontinued after R5) OFFICIAL TUTORIAL
  - Weaverbird OFFICIAL TUTORIAL
  - Clayoo \$\$\$
- Rendering
  - Vray Powerful, computation expensive, Many customizations, high skillcap OFFICIAL TUTORIAL
  - Enscape Realtime, efficient, built in library limited customization, low skillcap
  - Twinmotion good for lively animation, More efficient on larger projects
  - Maxwell
  - Lumion
  - Fluid Ray

**PLUGIN**

- Visual Programming
  - GRASSHOPPER

**plugin**

- Tutorial
  - Mode Lab Grasshopper Primer Third Edition OFFICIAL TEXT BOOK
  - Grasshopper Docs Library of native components and plug-in components
  - Grasshopper3d.com Official Forum
  - Parametric House \$ Well made tutorials but only partially free
- SITE
  - Environmental Analysis
    - Ladybug & Honeybee A Portal to many other professional environmental analysis programs
    - Dragonfly
    - Geco
    - Heliotrope
    - DIVA
  - Map/GIS
    - Elk
    - Mosquito
    - Heron
  - Landscape & Tree
    - Decoding Space Street network, data plotting Large scale planning
    - Bison
    - Lands Design
    - Phyllomachine
- Simulation
  - Physics Simulation
    - Kangaroo2(native)
  - Particle simulation
    - Quelea
    - Flexhopper More efficient than kangaroo at simulating clothes
- Programming Loop
  - Hoopsnake
  - Anemone
- Structural Analysis
  - Emu
  - Kiwi
  - Karamba
- Steel Structure
  - BullAnt
  - Visual ARQ
- Function Enhancement
  - Human Render, display Label
  - SEG
  - Lunchbox
  - Elephant
  - Wombat
- Software Integration
  - BIM
    - Grevit
    - Hummingbird
    - GeomGym /IFC
  - Excel
    - Bumblebee
  - Adobe Illustrator
    - Doodlebug
  - CAD
    - Pancake
- Robot Programming
  - Firefly
  - HAL
  - gHowl
  - Kuka Prc/Pr c Pro
- Mesh
  - Weaverbird
  - MeshPlus
- Fabrication
  - Ivy
  - Ngon
  - Origami
    - Crane
    - Flatworm
  - CNC
    - Droid
- Discrete aggregation
  - Fox
  - Wasp Great tool for creating modular system OFFICIAL TUTORIAL
  - Wasp ++
- Exotic Geometry
  - Chimpanzee Fractal Geometry
  - Pufferfish Morphing Geometry
  - Parakeet Pattern generation
  - Jewelry
    - Peacock
- AI
  - Machine Learning
    - Dodo
    - Owl
    - Galapagos(native)
  - Genetic optimization
    - Octopus
    - Wallacei
  - Agent simulation
    - Quelea
    - PedSim
    - Zebra

**RESOURCES**

- food4Rhino Place to download all Rhino plugins
- Grasshopper3d.com Official Forum for Grasshopper. You will likely end here when google rhino problems
- 犀牛shaper3D Chinese Rhino forum
- Mcneel Forum Official English Rhino forum. You will likely end here when google rhino problems
- Decoding space Toolbox Articles on tools and examples using the toolbox
- I Eat Bugs For Breakfast Blog of the creator of grasshopper. Articles on baseline concept and ideas

- coding
  - Python
  - Visual basic
  - C#