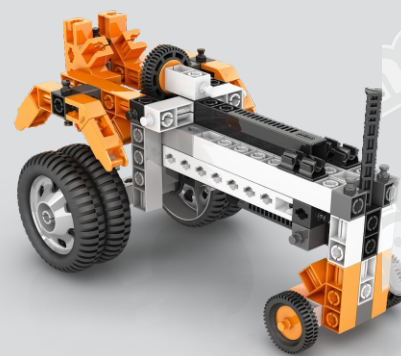




DISCOVERING STEM



build a field tractor

Follow the instructions to build this model of a field tractor and learn how different sizes of wheels produce different results. Learn how the size of the axle also affects the mechanical advantage of the machine.

- How the size of the wheel matters.
- How the size of the axle affects motion.



build a car with crane

This unique model of a car with crane will help you understand the principles of inclined planes and how they help lift heavy loads. Learn how the inclination of the plane affects the amount of effort applied.

- How inclined planes work.
- What inclination is.



build a steering motorbike

This model of a motorbike will introduce you to the way the simple machine of the wheel and axle works. Learn why a wheel on its own cannot be considered as a simple machine and how turning around corners becomes easy with a steering wheel.

- How the wheel and axle work.
- Why we need an axle.



build an airport staircase

Construct a model of an airport staircase that comes on wheels and find out why it is easier to climb an inclined ladder instead of moving straight up. Learn about the mechanical advantage that is gained when an inclined plane is used.

- How a staircase relieves us from effort.
- What the mechanical advantage of a plane is.

DISCOVERING STEM

Science • Technology • Engineering • Mathematics

MECHANICS

wheels, axles & inclined planes

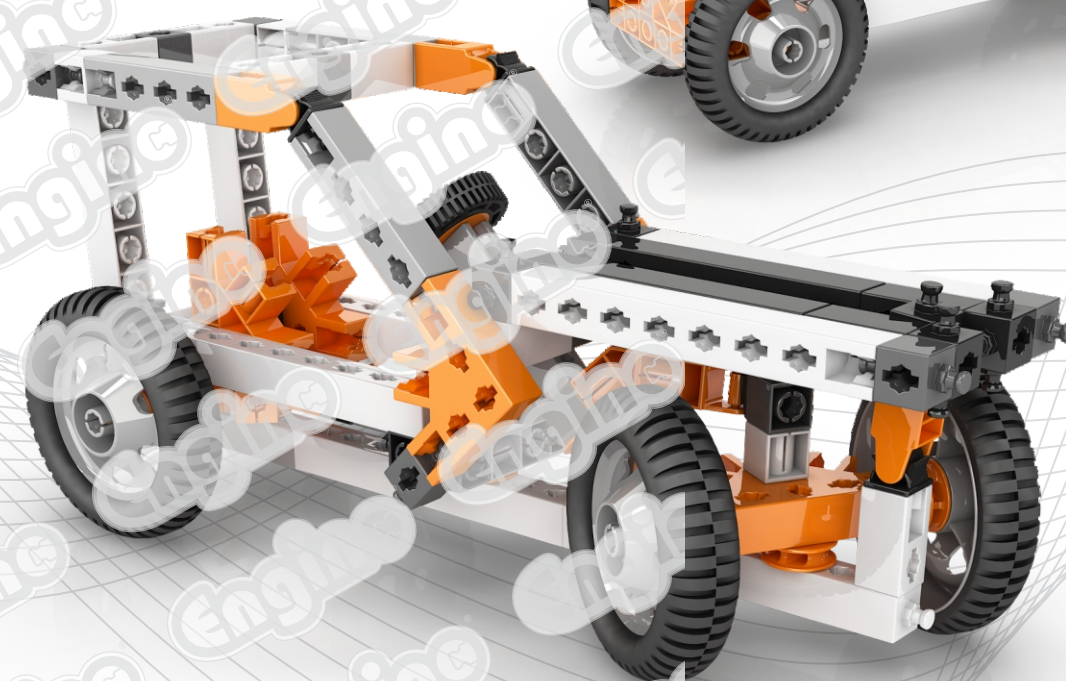
Learn how wheels and axles use friction to move objects easily and how big tyres compare to small tyres. Find out how an inclined plane can be used for lifting heavy objects and how another form of inclined plane, the wedge, is used in every day applications. Build 14 working models such as a launching platform, a door with knob, a well, an airport staircase, an experimental ramp and a splitting wedge. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

18 pages of theory and amazing facts!

6 pages of experimental activities!

4 pages of revision quiz!

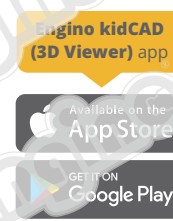
2 pages of step by step instructions!



EU OFFICE & FACTORY:
ENGINO-NET LIMITED
P.O. BOX 72100, 4200
LIMASSOL, CYPRUS
Tel.: +357 25821960
Fax: +357 25821961
E-mail: info@engino.com
Web: www.engino.com



3D interactive instructions
to download on your smart device



Product Code: **STEM02**

Edition 3.0

Engino

14 models to build

9+ years

master engineers

13 online instructions

1 printed instructions

Discovering **STEM**

The purpose of STEM education - Science, Technology, Engineering and Mathematics - is to provide students with the necessary skills, knowledge and experience in order to cope with the technological challenges of the future. Modern pedagogical theories suggest that the study of engineering should be incorporated in all other subjects, starting from elementary level. DISCOVERING STEM series, offers a practical solution for facing all these educational issues, aiding the teacher to engage students in STEM disciplines in a fun, exciting and interesting way! The educational packages are also ideal as a home learning tool! The series covers a broad area of subjects: Mechanics and Simple machines, Structures, Newton's Laws, Renewable Energy and even Programmable Robotics.

Brand **AWARDS:**



More models online

- A** Use your PC or tablet and go to the following link for more models:

www.engineo.com/instructions/stem02

- B** Download the app to discover step-by-step instructions in 3D view!

Engineo kidCAD (3D Viewer) app:



Contents



Theory

- 03** What we will learn
- 03** History of Wheels, Axles and Inclined planes
- 05** Definition of wheel and axle
- 06** Types of wheel and axle mechanisms
- 08** Physical laws
- 10** Wheel and axle as a lever
- 12** Axle as a pulley
- 13** Definition of inclined plane
- 14** Types of inclined planes
- 15** Forces
- 17** Study of different cases
- 19** Definition of wedge
- 20** Types of wedges



Experiments

- 21** Wheel size and friction
- 22** Wheel and axle as a lever
- 23** Axle as a pulley
- 24** Inclined plane
- 25** Study of different cases
- 26** Wedge



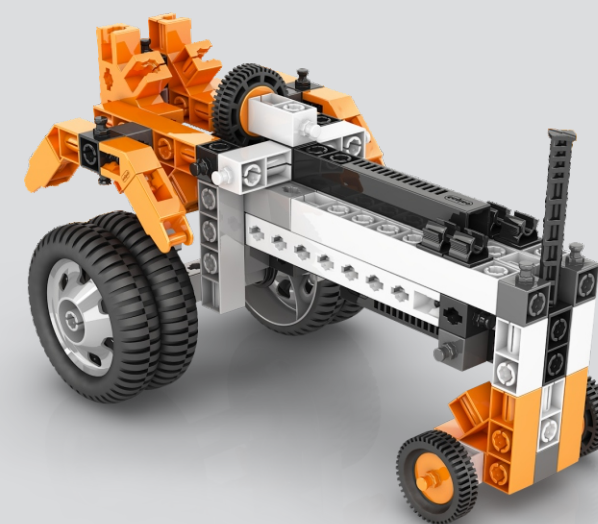
Quiz

- 27** Exercises 1-3
- 28** Exercises 4-6
- 29** Exercises 7-9
- 30** Exercises 10-11



Building Instructions

- 31** Airport staircase



STEM Science • Technology • Engineering • Mathematics



**Thank you for accessing our free
version of this resource.**

To continue reading and gain access to the full version,
please login and register your product.

We appreciate your interest and hope
you find our resources valuable.

Login or Register

