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The ISS Education Kit
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www.plantebiosenteret.no
http://www.space.gc.ca/asc/eng/csa_sectors/human_pre/iss/canadarm2/canadarm2.asp

Chapter 1

The International Space Station: www.esa.int/export/esaHS/iss.html
Other Space Agencies: www.esa.int/export/esaHS/ESAGREoVMOC_index_o.html
European participation: <http://www.esa.int/export/esaHS/isselements.html>
Cupola: http://www.esa.int/export/esaHS/ESA65KoVMOC_iss_o.html
DSM-R: http://www.esa.int/export/esaHS/ESAOXXoVMOC_iss_o.html
European Robotic Arm: http://www.esa.int/export/esaHS/ESAQEIoVMOC_iss_o.html
KidSpace (CSA): www.space.gc.ca/kidspace/
User Support and Operations Centres:
www.esa.int/export/esaHS/ESA1WJoVMOC_iss_o.html

1.1

Research in space: www.esa.int/export/esaHS/research.html
Columbus laboratory: www.esa.int/export/esaHS/ESAAYIoVMOC_iss_o.html
Columbus laboratory, fact sheet, with link to research facilities inside the Columbus laboratory: www.esa.int/export/esaHS/ESAFRGoVMOC_iss_o.html
Biolab: www.esa.int/export/esaHS/ESA8EGoVMOC_iss_o.html

1.2

Where is the ISS:

Where is the ISS: www.esa.int/seeiss
See the ISS from your hometown (info):
www.esa.int/export/esaHS/ESAo16KE43D_index_o.html
Where is the ISS? – world map (NASA):
www.spaceflight.nasa.gov/realdata/tracking/index.html
Can I see the ISS from my back yard? (NASA):
www.spaceflight.nasa.gov/realdata/sightings/index.html

More on orbits:

orbits: www.esa.int/export/esaCP/ESA1o4MBAMC_FeatureWeek_o.html
orbits: www.esa.int/export/esaLA/ASEHQOI4HNC_launchers_o.html
interactive programme about satellites in orbit:
www.esa.int/export/esaCP/ESAC8Z1VMOC_FeatureWeek_o.html
Shoot a cannon ball into orbit (NASA): <http://spaceplace.jpl.nasa.gov/orbits1.htm>
Animation orbits (CNES – in French):
www.cnes.fr/cnes-edu/sommaire/passion/espace/quittons/circuler/welcome.htm

Planets/Astronomy:

Planets and planetary systems: www.esa.int/export/esaCP/ESAYIXNED2D_index_o.html
http://www.esa.int/export/esaCP/ESAG3VG18ZC_index_o.html
The ESA/ESO Astronomy Exercise Series (Teaching tool): www.astroex.org/
Science glossary: <http://sci2.esa.int/glossary/>
Space topics: <http://sci.esa.int/home/spacetopics/>

Satellites:

Eduspace (Teaching tool – Earth observation): www.eduspace.esa.int/

Meteorology (Teaching tool – MSG-satellite):

www.esa.int/export/esaCP/ESASW5OED2D_index_o.html

Earth observation: www.esa.int/export/esaSA/earth.html

Navigation and Telecommunication: www.esa.int/export/esaSA/

Satellites: www.esa.int/export/esaCP/ESAN2VG18ZC_index_o.html

Satellites: www.esa.int/export/esaCP/ESA7UXNED2D_index_2.html

1.3

Human Spaceflight: <http://www.esa.int/export/esaHS/>

About the International Space Station:

http://www.esa.int/export/esaHS/ESA6NEoVMOC_iss_o.html

Europe's partners: http://www.esa.int/export/esaHS/ESA0241VMOC_iss_o.html

Careers in space (CSA): http://www.space.gc.ca/asc/pdf/educator-careers_space.pdf

Careers in space industry (CSA):

http://www.space.gc.ca/asc/pdf/educator-job_space.pdf

1.4

Human Spaceflight: <http://www.esa.int/export/esaHS/>

About the International Space Station:

http://www.esa.int/export/esaHS/ESA6NEoVMOC_iss_o.html

European participation: <http://www.esa.int/export/esaHS/isselements.html>

MELFI: http://www.esa.int/export/esaHS/ESAJVCF18ZC_index_o.html

Cryosystem: http://www.esa.int/export/esaHS/ESABHPVTYWC_index_o.html

Microgravity Science Glovebox:

http://www.esa.int/export/esaHS/ESAUEQVTYWC_index_o.html

Control Centres: http://www.esa.int/export/esaHS/ESA0YJoVMOC_iss_o.html

Participating States: <http://www.esa.int/export/esaHS/partstates.html>

European Space Agency (ESA): www.esa.int

Other Space Agencies:

http://www.esa.int/export/esaHS/ESAGREoVMOC_index_o.html

Odissea mission: http://www.esa.int/export/esaHS/ESAZ9576K3D_astronauts_o.html

Astronauts: <http://www.esa.int/export/esaHS/astronauts.html>

Chapter 2

Current status: www.esa.int/export/esaHS/ESAl2XoVMOC_iss_o.html

Assembly stages (CSA):

www.space.gc.ca/csa_sectors/human_presence/iss/assembly/default.asp

Node 2: http://www.esa.int/export/esaHS/ESAWELoVMOC_iss_o.html

Node 3: http://www.esa.int/export/esaHS/ESAFQLoVMOC_iss_o.html

Canadarm2:

http://www.space.gc.ca/asc/eng/csa_sectors/human_pre/iss/canadarm2/canadarm2.asp

2.1

Rocket technology (Teacher's Guide):

www.esa.int/export/esaCP/ESAOMFG18ZC_index_o.html

ATV: http://www.esa.int/export/esaHS/ESA4ZJoVMOC_iss_o.html

Learning to live with the laws of motion:

www.esa.int/export/esaHS/ESABYUoVMOC_astronauts_o.html

Launchers:

Launchers: www.esa.int/export/esaLA/index.html

Action and reaction: www.esa.int/export/esaCP/ESA1NFG18ZC_index_2.html

Green propellant for Space Propulsion:

www.esa.int/export/esaCP/ESAM1tpz9nc_index_2.html

How do launchers work?: www.esa.int/export/esaLA/ASEDIUoTCNC_launchers_2.html

On the right paths: www.esa.int/export/esaCP/ESA6YFG18ZC_index_2.html

Rockets: www.esa.int/export/esaCP/ESAVPXNED2D_index-2.html

What is a launcher?: www.esa.int/export/esaLA/ASEZHUoTCNC_launchers_2.html

With three stages in space: www.esa.int/export/esaCP/ESAMPFG18ZC_index_2.html

2.2

Spacewalks: www.esa.int/export/esaHS/GGGMo4JPEIC_astronauts_o.html

European astronauts: www.esa.int/export/esaHS/astronauts.html

EVA (NASA): www.spaceflight.nasa.gov/station/eva/index.html

EVA (NASDA): http://spaceboy.nasda.go.jp/note/yujin/e/yuj101_eva_e.html

Spacesuits (NASDA): http://spaceboy.nasda.go.jp/note/yujin/e/yuj108_suits_e.html

Spacesuits (NASA): <http://www.jsc.nasa.gov/programs/exhibits/suits.html>

2.3

Fact Sheet, The European Robotic Arm:

http://www.esa.int/export/esaHS/ESAQEIoVMOC_iss_o.html

Fact Sheet, Cupola: http://www.esa.int/export/esaHS/ESA65KoVMOC_iss_o.html

Canadarm2:

http://www.space.gc.ca/asc/eng/csa_sectors/human_pre/iss/canadarm2/canadarm2.asp

History of Robots (CSA): http://www.space.gc.ca/asc/pdf/educator-story_robot.pdf

Introduction to Robots and Automated Systems (CSA):

http://www.space.gc.ca/asc/pdf/educator-robot_edu.pdf

Chapter 3

European astronauts: www.esa.int/export/esaHS/astronauts.html

Living in space: www.esa.int/export/esaHS/ESAGO9oVMOC_astronauts_o.html

Daily life: www.esa.int/export/esaHS/ESAH1VoVMOC_astronauts_o.html

Learning to live with the laws of motion:

www.esa.int/export/esaHS/ESABYUoVMOC_astronauts_o.html

3.1

European astronauts: www.esa.int/export/esaHS/astronauts.html

Odissea mission: www.esa.int/export/esaMI/Odissea_Mission_ENGLISH/

Living in space: www.esa.int/export/esaHS/ESAGO9oVMOC_astronauts_o.html

Learning to live with the laws of motion:

www.esa.int/export/esaHS/ESABYUoVMOC_astronauts_o.html

Daily life: www.esa.int/export/esaHS/ESAH1VoVMOC_astronauts_o.html

Living on ISS (Educators Resources, CSA):

www.space.gc.ca/kidspage/1-edu_res/resources/all/default.asp

Living in space (NASA): www.spaceflight.nasa.gov/living/index.html

3.2

Living in space: www.esa.int/export/esaHS/ESAGO9oVMOC_astronauts_o.html

Learning to live with the laws of motion:

www.esa.int/export/esaHS/ESABYUoVMOC_astronauts_o.html

Daily life: www.esa.int/export/esaHS/ESAH1VoVMOC_astronauts_o.html

Living on ISS (Educators Resources, CSA):

www.space.gc.ca/kidspage/1-edu_res/resources/all/default.asp

Living on ISS: http://www.space.gc.ca/kidspage/1-edu_res/resources/kindergarden/default.asp

Living in space (NASA): www.spaceflight.nasa.gov/living/index.html

3.3

Water recycling (MELISSA project):

<http://www.estec.esa.nl/ecls/waterrecycling.html>

http://www.esa.int/export/esaCP/ESAMEHG18ZC_Improving_o.html

http://www.esa.int/export/esaCP/ESA4QGZ84UC_Improving_o.html

http://www.esa.int/export/esaCP/ESA9CVoVMOC_Life_o.html

Water on the Space Station: <http://spaceflight.nasa.gov/living/factsheets/water.html>

International Space Station Life Support Systems (NASA):

<http://www.msfc.nasa.gov/NEWMsFC/eclss.html>

Water purification (NASA):

<http://spacelink.nasa.gov/Instructional.Materials/NASA.Educational.Products/International.Space.Station.Clean.Water/Water.Purification.for.the.ISS.pdf>

2003 International Year of Fresh Water (UNESCO):

http://www.wateryear2003.org/ev.php?URL_ID=1456&URL_DO=DO_TOPIC&URL_SECTION=201/

Chapter 4

Research in space: www.esa.int/export/esaHS/research.html

User Support and Operations Centres:

www.esa.int/export/esaHS/ESA1WJoVMOC_iss_o.html

4.1

Weightlessness:

Weightlessness: www.spaceflight.esa.int/users/materials

Weightless in space: www.esa.int/export/esaCP/ESAB2VG18ZC_index_o.html

Gravity: www.esa.int/export/esaCP/ESA4KXNED2D_index_2.html

Microgravity (NASA):

<http://spacelink.nasa.gov/Instructional.Materials/Curriculum.Support/Physical.Science/Microgravity/>

Orbits (animation – weightlessness):

www.esa.int/export/esaCP/ESA104MBAMC_FeatureWeek_o.html

Shoot a cannon ball into orbit (NASA): <http://spaceplace.jpl.nasa.gov/orbits1.htm>

Animation orbits (CNES – in French):

www.cnes.fr/cnes-edu/sommaire/passion/espace/quittons/circuler/welcome.htm

Parabolic Flights and sounding rockets:

ESA Parabolic Flights: www.spaceflight.esa.int/users/file.cfm?filename=miss-parafl

ESA Student Parabolic Flights: www.estec.esa.nl/outreach/parabolic/

Floating students at work: www.esa.int/export/esaHS/ESAFDMPV16D_index_o.html

Sounding rockets: www.esa.int/export/esaHS/ESATRRVRXLC_research_o.html

4.2

Research in space: www.esa.int/export/esaHS/research.html

Research in space (CSA): www.space.gc.ca/csa_sectors/human_presence/iss/science/default.asp

Space research (NASA): <http://spaceresearch.nasa.gov/>

Living in space (NASA):

www.spaceflight.nasa.gov/living/index.html

Biolab: www.esa.int/export/esaHS/ESA8EGoVMOC_iss_o.html

Microgravity Science Glovebox:

www.esa.int/export/esaHS/ESAUEQVTYWC_research_o.html

Frank De Winnes mission experiments:

www.esa.int/export/esaMI/Odissea_Mission_ENGLISH/ESAOJ176K3D_o.html

Foam experiments: www.tn.utwente.nl/wsl/research/Foams/foam_research.htm

4.3

Gardens in Space: http://www.esa.int/export/esaHS/ESA93GG18ZC_research_o.html

Articles on plants in space (NASA):

http://www.nasaexplores.com/search_nav_k_4.php?id=01-048&gl=k4

http://www.nasaexplores.com/search_nav_9_12.php?id=03-002&gl=912

http://www.nasaexplores.com/search_nav_5_8.php?id=03-014&gl=58

http://www.nasaexplores.com/search_nav_5_8.php?id=02-042&gl=58

<http://liftoff.msfc.nasa.gov/news/2003/news-plants.asp>

Investigating plants in space (NASA):

<http://spacelink.nasa.gov/products/Investigating.Plants.in.Space/>

Plants can recycle:

http://nasaexplores.nasa.gov/show_912_teacher_st.php?id=030109113549

Plants containers: http://www.ntnu.no/gemini/2001-05/30_1.htm

http://www.nasaexplores.com/show_58_teacher_st.php?id=030109112217

4.4

Materials Exposure and Degradation Experiment:

<http://www.cnes.fr/>

<http://www.onera.fr/>

<http://www.soton.ac.uk/>

<http://www.estec.esa.nl/>

Material Science in space: <http://www.spaceflight.esa.int/users/materials/index.html>

About research in space:

http://www.esa.int/export/esaHS/ESA6CToVMOC_research_o.html

Innovative technology:

http://www.esa.int/export/esaHS/ESAELPoVMOC_research_o.html

Inside the Columbus laboratory/ Material Science Laboratory:

http://www.esa.int/export/esaHS/ESATZRoVMOC_iss_o.html

http://www.esa.int/export/esaHS/ESA2HToVMOC_iss_o.html

Columbus/ external payload:

http://www.esa.int/export/esaHS/ESAAYIoVMOC_iss_o.html

Chapter 5

Future: www.esa.int/export/esaHS/future.html

Future of human spaceflight: www.esa.int/export/esaCP/GGGUPPD3KCC_Life_o.html

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