PTC Academic Program

Teachers' guide
Middle and secondary schools

Written by Tim Brotherhood	These materials are © 2013, Parametric Technology Corporation (PTC) and acknowledged sources.
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Feedback	To ensure these materials are of the highest quality, users are asked to report errors to the author.
tbrotherhood@ptc.com	Suggestions for improvements and other activities are welcome.
Product code	PTC-SCH-GLO-C2

The following organisations share a common goal of promoting STEM subjects and endorse PTC's Academic Programme.

Contents

PTC in schools

This document is a guide to for middle and high schools who want to take part in the PTC Academic Programme.

If you are ready to download, license and install PTC Creo, jump to the appendices

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PTC supports schools by helping them teach science, technology, engineering, and mathematical skills by providing real world product development tools, curriculum, projects and design challenges.
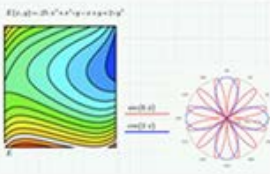
Our aims are to help pupils become discerning consumers in an increasingly technological society and boost the supply of designers and engineers for PTC customers.

PTC provides schools with:

- Free design and engineering software
- Free online software training
- Challenging design competitions
- Online communities for collaboration and learning
- Support from our engineers and educators

Australia – A long term relationship with INTAD provides training and support for teachers and schools in Australia.

China – PTC reseller Semia supports schools and teachers in this region.

England – PTC manages a team of trainers who deliver accreditation, training and support at a number of levels.

New Zealand – The University of Auckland provides training and support for teachers and schools.

Philippines – Felta has been supporting schools for several decades and provides PTC Creo training and support for teachers and schools in the region.

Scotland – PTC is a partner in the SQA DIVA software scheme and manages a team of trainers offering accredited training and follow-on courses.

Thailand – This region is covered by PTC reseller Comgraph who provide training and support for teachers and schools.

Wales – PTC works closely with STEM Cymru who manages a team of trainers offering courses for accreditation and classroom implementation.

Which software is available?

Teachers and pupils can access exactly the same software used by many of the largest design and engineering companies in the world and use it at home.

PTC Creo is used by many of the top engineering and design companies to create 3D digital models, applying maths and science concepts to unlock innovation.

PTC Mathcad is used by engineers and universities around the world. It is like a word processor for mathematics. Mathcad is available at subsidised rates to universities, colleges and schools and is provided free to schools taking part in FIRST Robotics and Real World Design Challenge.

PTC Windchill is one of the leading product lifecycle management systems in the world and is available to universities, colleges and teams taking part in FIRST robotics and Real World Design Challenge competitions..

PTC Creo - single seat licenses

Students can register download and install the **PTC Creo Student Edition** by following the Creo link on www.ptcschools.com. (The Student Edition license lasts for one year and is renewable on request)

Teachers should follow the procedure in the appendices to download, license and install the **Academic Edition** of PTC Creo.

Creo - school site license

When a teacher completes accredited training, they are issued with a school site license and network pack.

The network pack contains:

- **Network product code** – Used to install the PTC license server on a network holding 150 floating licenses. **PTC Creo Academic Edition** can be installed on any number of computers and up to 150 users can be working with Creo simultaneously.
- **Single seat product codes (100)** – Intended for staff and students to install **PTC Creo Academic Edition** at home for educational use. Note: additional bulk codes are issued on request.

Creo 3D modelling software

Academic Edition – FREE (Network or Standalone)

Student Edition* - FREE

Creo Parametric Foundation
Creo Advanced Rendering
Creo Legacy Migration
Creo Language Chinese
Creo Flexible Modeling
Creo CAM Lite
Creo Behavioral Modeling
Creo Mechanism Dynamics
Creo Direct
- Downloaded FREE from www.ptc.com/go/creoforschools
- Controlled by Product Code
- Term: One Year

Additional Functionality:
Creo Advanced Assembly
Creo Expert Framework
Creo ECAD-MCAD Collaboration
Creo Complete Machining
Creo NC Sheetmetal
Creo Computer-aided Verification
Creo Plastic Advisor
Creo Expert Moldbase
Creo Progressive Die
Creo Complete Mold Design
Tolerance Analysis
Creo Spark Analysis
Creo Interactive Surface Design
Creo Piping & Cabling Extension
Creo Manikin
Creo Manikin Analysis
Creo Simulation
Creo Advanced Simulation
Creo Illustrate

- Provided to schools FREE when a teacher completes accredited training.
- Controlled by Product Code.
- Term: Two Years

PTC Creo features

Creo Sketch – The quickest and easiest way for students to record their design ideas electronically

Creo Layout lets you quickly create detailed design concepts in 2D, add detailing information such as dimensions, annotations, etc. and then migrate the 2D data in your 3D design using PTC Creo Parametric. Your design data moves seamlessly between apps and design intent is fully retained.

Creo Parametric – Design – Integrated, parametric 3D software that allows users to move between 2D and 3D design data.

> Creo Parametric including Freestyle
> Creo Expert Framework Extension
> Creo Advanced Assembly Extension
> Creo Interactive Surface Design Extension II
> Creo Piping & Cabling Extension
> Creo Advanced Rendering Extension
> Creo Manikin and Manikin Analysis
> Creo Application Programming Toolkit
> Creo Legacy Migration
> Creo ECAD-MCAD Collaboration
> Creo Language Option - Chinese
> Creo Flexible Modeling
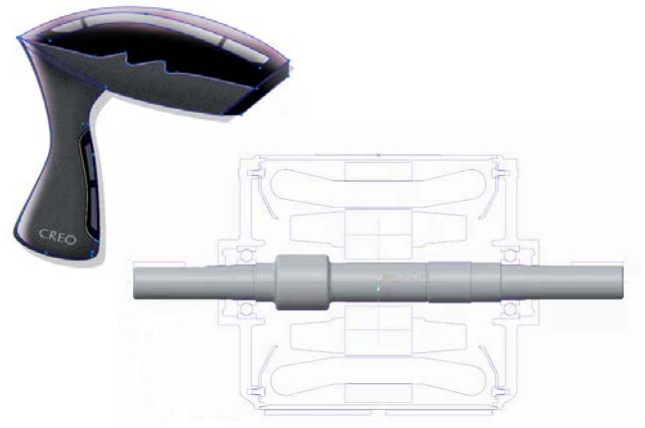
Creo Parametric - Production

> Creo Complete Machining Extension
> Creo NC Sheet metal Option
> Creo Computer-aided Verification Option
> Creo Plastic Advisor Extension
> Creo Expert Moldbase Extension
> Creo Progressive Die Extension
> Creo Complete Mold Design Extension
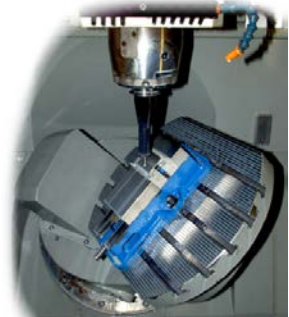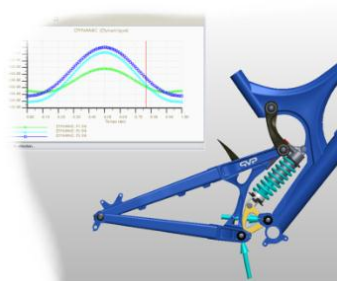
Creo Parametric - Simulation

> Creo Advanced Simulation Extension
> Tolerance Analysis powered by CETOL
> Creo Behavioural Modeling Extension
> Creo Mechanism Dynamics
> Creo Spark Analysis Extension

Creo View MCAD – Quickly view, interrogate and distribute CAD models to gain valuable engineering design insight and feedback.

Creo Illustrate – Allows you to easily convey complex product information and procedures graphically with 3D rich, static and interactive illustrations and animations. Perfect for technical illustration and product manuals.
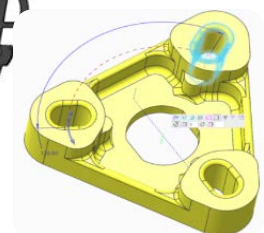
Creo Direct – Easy to use, fast and flexible solution that gives users the ability to create and edit 2D CAD data using a direct
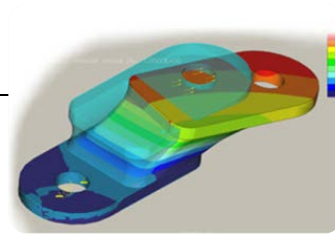
modelling approach

Creo Simulate – Used to validate the behaviour and mechanical strength of parts and assemblies subjected to external loads, forces, pressures and temperatures.

PTC Academic web

www.ptcschools.com

This is where schools access all the resources for the PTC Academic Programme

School site license

Teachers follow this process to get a FREE site license of **PTC Creo Academic Edition** (Links in appendices)

Teacher registers for an Academic web account

Teacher registers, downloads and installs a single seat Academic Edition of Creo.

Teacher installs a single seat license of Creo Academic Edition.

Teacher signs up for an accredited course based on their previous expertise

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New to 3D modelling

6 hours of face to face training covering:

Fundamentals of 3D modelling
Primer tutorial.

Confident with 3D modelling

Trainer emails Primer tutorial which the teacher completes prior to face to face

(Trainer provides online support)

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6 hours of face to face training covering:

Issues arising from primer and an overview of additional Creo features

Pedagogy of 3D modelling in STEM teaching and learning

Accreditation task

Teachers design and model a new component for the Primer kit and submit their design
to the Schools, Photo Albums thread in PTC Communities

Details later in this document

Trainer reviews the model and provides feedback to the teacher

Trainer notifies PTC the teacher has completed the task with details of the teacher's;
full name, email address, school name and school contact details.

PTC issues the teacher with a Creo network product code and installation instructions

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Note: Academic Edition licenses last for two years and are renewable on request.

PTC Online Account

To gain access to PTC's software, online tutorials and classroom resources teachers must first register as an academic user on the PTC web site. The link to register is in the installation appendices.

Managing your PTC web account

Once registered, teachers can manage their account online including:

Lost password?

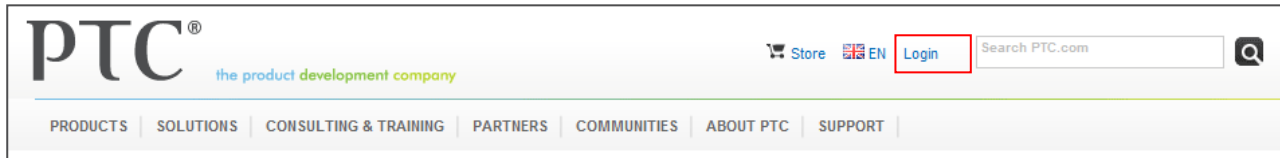If you have problems with your login, there is a link to Reset your Password.

Locked Account?

If you enter your username/password incorrectly three times, your account will be locked. At the bottom of the page there is a link to contact web accounts. Follow the link and ask for your account to be unlocked and password reset.

Your academic login is used for installation and when accessing a wide range of web resources.

Creo 2 software installation

Detailed installation guides for single PCs and networks are in appendices at the end of this document.

Creo training

Below is a typical programme for accredited training.

Experienced users of 3D parametric modelling are, at the discretion of their trainer, eligible for the fast track training where the Primer tutorial is completed as supported self-study in lieu of day one.

PTC has accredited trainers offering courses in many regions. Check here for your region.
http://www.ptc.com/appserver/mkt/etd/workshop.jsp?&dbkey=1072

Programme – Day one

Beginners   Fast track

09.30	Arrival
10.00	Welcome, introductions and domestics
	Overview
10.30	**Navigating Creo**
	Part modelling – Primer cube
12.00	Lunch - feedback on task
12.45	Examples of work in schools.
13.00	**Part modelling** – Primer strut
14.15	**Assembly**
	Tea/coffee as required!
	Creating an Academic account on www.ptc.com
	Downloading Creo
	Installation and configuration
15.00	Primer **render** and **drawing**
	Summary and feedback
16.30	Finish

Target: Experienced users of 3D parametric modelling software.

Trainers review with teachers whether their experience would enable them to complete the introductory Primer prior to attending face to face training.

Fast track teachers complete the Primer as supported self-study in lieu of day one face-to-face.

During this period, the trainer offers email, telephone and, where necessary, online shared desktop support.

Programme – Day two

09.00   Arrival - Review day one and any homework.

09.30   Demonstrate **Freestyle** (vacuum nozzle) and **Creo Direct.**

10.30   **Editing** and correcting faults.

11.00   **Demonstrations -** Sheet metal, mechanism, FEA**.** (customise items for region, e.g. surfacing for Scotland qualifications).

          Accreditation – Demonstrate saving images from Creo and uploading to PTC Communities.

12.30   Lunch.

13.15   **Pedagogy** - 3D modelling in STEM teaching and learning.

14.15   Tea/coffee as required!

          Planning – Assist teachers plan how they will introduce Creo into their courses.

15.30   **Demonstration of further resources:**

- www.ptcschools.com.
- Precision LMS including pupil access.
- PTC Communities.
- Learning exchange.

Summary and feedback.

Reminder for teachers to complete and submit their accreditation task.

16.30   Finish.

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Accreditation

To complete their accreditation, PTC requires teachers upload a photo album of their work with Creo to PTC Communities. This is described below and will be demonstrated on face to face training.

http://communities.ptc.com/community/academic-program/schools-program

The Photo Album should have a minimum of:

Title – Teacher Showcase + your name + school name.

Description – Brief description of the project (see below).

Image – A Creo screen shot of the new component they has been designed and modelled.

Image – A Creo render of the new component built into an assembly

Image – A Creo Engineering drawing with three orthographic views plus isometric view of their new component with dimensions and annotations.

Additional images would be welcome particularly where they show a manufactured product.

The teacher submits their photo album and emails their trainer.

Note: Teachers can negotiate an alternative modelling task providing this is done with their trainer prior to you starting modelling.

Capturing images of your Creo models

1. Start with your model, assembly, render or drawing open on screen in Creo
2. In the **File** menu follow **Save As** then click **Save a Copy**.
3. Open the **Type** list and select an image format such as **JPG** (**TIF** for a drawing).
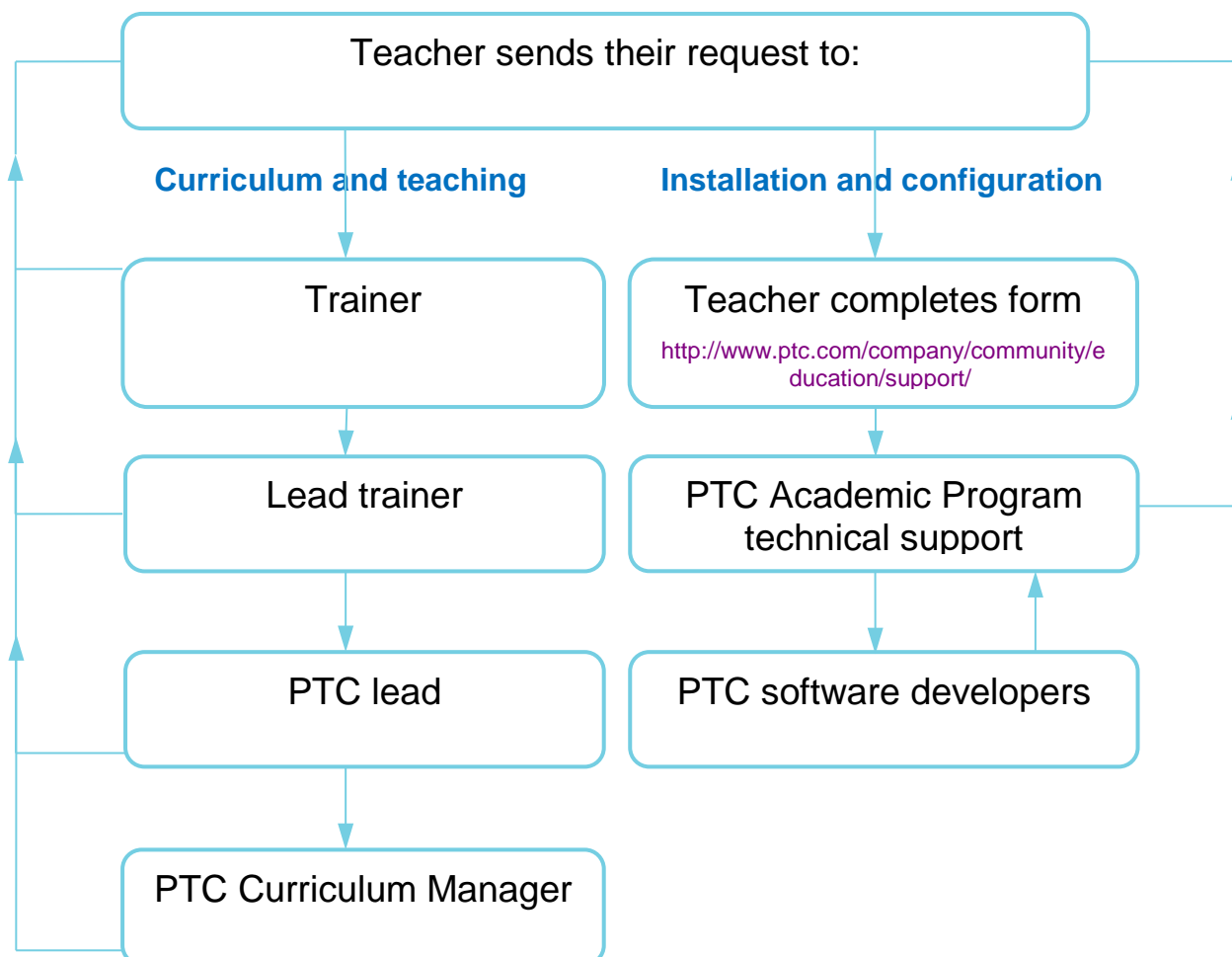4. Click **Save**.

Uploading a photo album

1. Open the PTC Communities Schools page - http://communities.ptc.com/community/academic-program/schools-program
2. **Log in** using the link at the top of the page using your www.ptc.com username and password.
3. Click on the **Photo Albums** tab
4. On the right of the screen click on **Create a Photo Album**
5. In the Photo Album Name field, type **Teacher Showcase – Your Name – Your School**
6. In the Description field enter the name of your trainer and explain in a few lines where the idea for the design came from, how you modelled it using Creo and how you plan to introduce Creo into your teaching.
7. Click to select the **Anyone** radio button
8. Type in the tags: **Creo parametric school 3D model** plus any other tags you want to use.
9. Click **Create Photo Album**
10. Click on the **Browse** button to locate an image of your models, drawings or renders.
11. Type in a **caption** and **tags** for the image.
12. Click **Add another photo** and repeat the process for your other images.
13. Click **Add** to upload your photo album to the forum

Support for teachers

Trainers are carefully selected for their teaching skills and expertise using Creo. To ensure the best possible experience for teachers, PTC provides trainers with regular updates, face to face sessions and online support.

With their local knowledge and familiarity with the teachers they train, trainers should be the first point of contact if you need support.

In the unlikely event the trainer cannot answer the question; your enquiry will be routed in the following way.

Teacher sends their request to:

Curriculum and teaching	**Installation and configuration**
Trainer	Teacher completes form http://www.ptc.com/company/community/education/support/
Lead trainer	PTC Academic Program technical support
PTC lead	PTC software developers
PTC Curriculum Manager	

If you need to contact PTC academic support direct, email: schools@ptc.com

Becoming a trainer

We are keen to hear from teachers who are confident using Creo in the classroom who would like to train other teachers.

If you are interested, please email your CV/resume to: schools@ptc.com

Creo landing page

When Creo opens, the internal browser displays the Creo Education web page. Here you will find links to the extensive resources PTC provides to support schools.

Precision LMS software tutorials

Precision LMS contains over 1000 hours of multi-media tutorials for teachers and students.

Precision LMS It is a perfect way to learn more about Creo with each module containing one or more of the following.

Lecture – An explanation of the concepts and processes.

Demonstration – A narrated screen video demonstration by experts.

Procedure – Fully illustrated step by step process.

Teacher access

Sign up on the home page at: https://plms4schools.ptc.com/precisionlms/

After registration, accounts may take up to four working days to become active. Applications are carefully vetted to make sure only teachers and students in middle and secondary schools gain access to the Schools Precision LMS system.

Student access

Once a teacher has an active account, students who have created an academic account on PTC.com (when installing PTC Creo) can register using the same link: https://plms4schools.ptc.com/precisionlms/

Managing student access

Teachers can allocate courses and monitor student use and performance in the end of course tests. All this is available in the teacher's PLMS4Schools admin page in.

Note: When registering, students must enter the name of their school in the company field and the name plus email address of their teacher in the appropriate places on the form. This will be checked before they are given access to the resources.

Student software license

There are two versions of PTC Creo available to students and teachers to use at home and disconnected from the school network.

PTC Creo Student Edition

This is a free, reduced feature set version of Creo. Students can register here.

PTC Creo Academic Edition

This is the same fully featured version of PTC Creo installed on school networks.

When a teacher completes accredited training they are issued with a network pack that includes 100 single seat product codes for PTC Creo Academic Edition.

One of the easiest ways to make Creo available to students is through the school library.

Schools can make copies of the installation DVD and make them available through the school library. Librarians will need to issue one of the product codes.

To help with this, your Creo trainer can provide a Word form for librarians to track product codes as they are issued to students.

Library form.docx

A paper license is not required because, during installation, the person agrees to the conditions of use when they click "I agree to…"

For schools that require a student license, your trainer has a Word document you can edit.

Student license agreement.docx

The above document includes full installation and configuration instructions to be sent home with students so they are working with the correct units and drawing standards and can access Learning Connector.

PTC Communities

PTC provides this dynamic forum for all users of PTC software.

http://communities.ptc.com/community/academic-program/schools-program
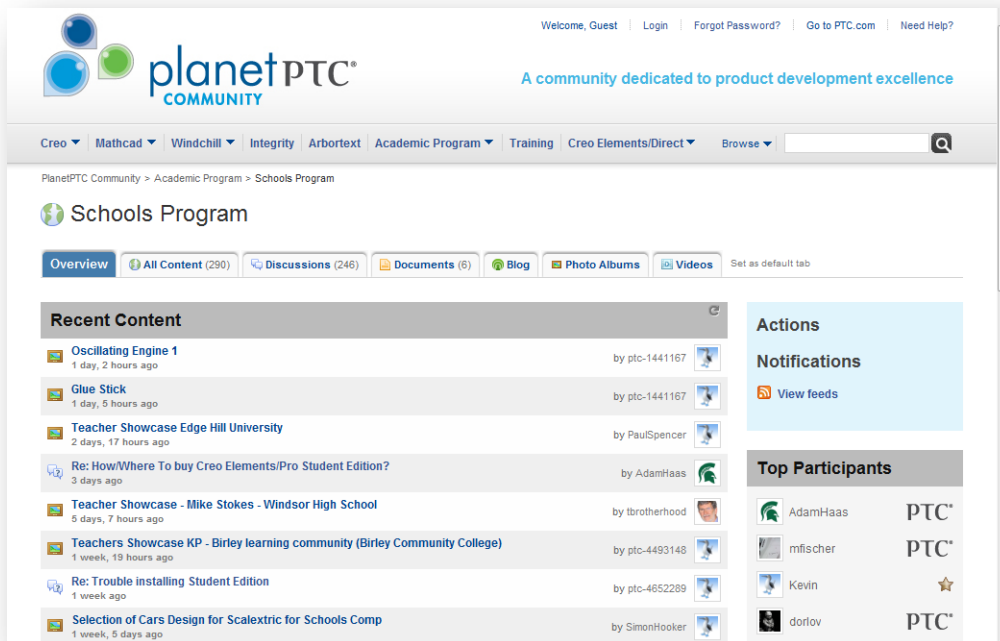
As well as our schools programme, PTC Communities has threads for all PTC software.

Teachers and pupils are encouraged to use PTC Communities to showcase their work, connect with others and pose questions for others to offer solutions.
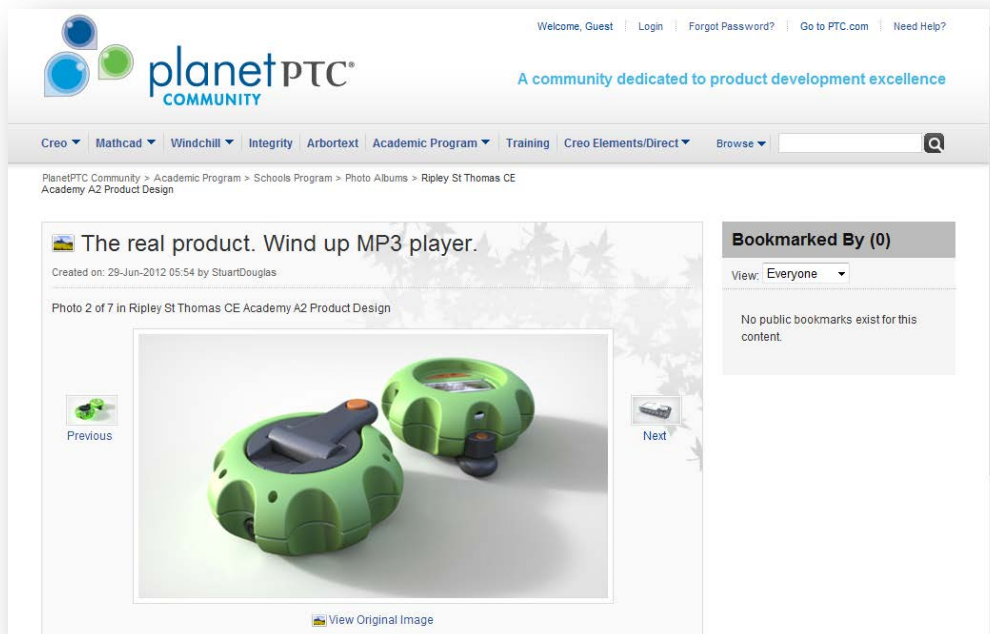
PTC Communities is a great place to ask for help, you may get an answer from a professional engineer, a teacher or even another school pupil!

Appendix 1 - Installing Creo 2 Academic Edition – Single seat

Before you start

1. If you don't already have an account on www.ptc.com create one here:
   https://www.ptc.com/appserver/common/account/ptcacademic.jsp

2. Login to the Academic downloads page and follow the on-screen instructions to the download page.
   http://www.ptc.com/appserver/auth/it/esd/academic.jsp

Creo 2.0		
Win 32-64 DVD (4478 MB)	Download Manager	HTTP
HelpCenter (2658 MB)	Download Manager	HTTP
Install from web (OPTIONAL) (29 MB)	Download Manager	HTTP

3. Click on the Download Manager link to download a zip of the install DVD and unzip to a temporary folder:

Installation

4. Your trainer/teacher should give you a *single seat product code*.

5. In the temporary folder from step 2 above, double click on **setup.exe.**

6. Select **Install New Software.**

7. **Accept** License agreement.

8. **Cut and paste** your single seat **product code** from step 2 above into the **Simple License Entry field** and hit **Enter** on the keyboard. PROBLEMS? See Appendix 3

9. **Log in** using your www.ptc.com username (email) and password.

10. Click **Install Licensing.**

After a short pause, a license will be created on your PC and the license will be displayed in the License Summary section. **Note**: if the login fields are not available see Appendix 3

11. On the Product screen, **deselect** the **MKS** application.

12. Optional - Installation of Advanced Framework Extension

    a. On the Application Selection page, click on **Customise**. In the list of applications select **Creo Parametric** and the tick/check the **Advanced Framework Extension** option. Click **OK** and continue the installation.

13. Click **Install**.

Configuration

14. Once successfully installed, use Windows explorer to view the folder:
    C:\Program Files\PTC\Creo 2.0\Common Files\M050\creo_standards

15. Double click on the file **configure.bat** and follow the instructions to configure Creo for the drawing standards and units of measurements you require. In the UK, choose option 4 to set mm,kg,sec and BS8888 drawing standards.

16. Double click on the file **plms4schools.bat** to configure Creo Learning Connector for schools content.

17. Run Creo and additional applications like Thumbnail viewer and Creo View will be installed.

18. Optional - Advanced Framework Extension – If you have installed this module it must be enabled in the config.pro.

    a. Use Windows Explorer to view the folder:
       C:\Program Files\PTC\Creo 2.0\Common Files\M050\text\

    b.   Open the **config.pro** file using Wordpad.
    c.   Add the following line to the bottom of the file.
    d.   **afx_enabled YES**
    e.   **Save** the file and close Wordpad.
    f.   Restart Creo Parametric and when an assembly is open you should see the Framework tab.

You can now use Creo 2.0

Note: The file **ReadThisFirst.PDF** in the install DVD/temporary folder contains information on PC specifications and further details about installation and configuration.

Support - If you have problems installing Creo you can get support here:
http://www.ptc.com/company/community/education/support/

Appendix 2 - Installing Creo 2 Academic Edition – network

The schools license provides 150 floating seats and 100 single seat product codes. Schools requiring more should contact schools@ptc.com.

Before you start

1. A member of staff needs to compete accredited training.

2. The trainer notifies PTC who Issues the accredited teacher with a *network product code*.

3. During training the teacher will create an academic account on www.ptc.com:
   https://www.ptc.com/appserver/common/account/ptcacademic.jsp

4. Login to the Academic downloads page and follow the on-screen instructions to the download page.
   http://www.ptc.com/appserver/auth/it/esd/academic.jsp

Creo 2.0		
Win 32-64 DVD (4478 MB)	Download Manager	HTTP
HelpCenter (2658 MB)	Download Manager	HTTP
Install from web (OPTIONAL) (29 MB)	Download Manager	HTTP

5. Click on the **Download Manager** link to download a zip of the install DVD and unzip to a temporary folder:

PTC License Server installation

1. From the temporary folder, start **setup.exe** on the server machine

2. Select **Setup License**

3. **Accept** License agreement

4. **Cut and paste** your **network product code** into the **product code** field. PROBLEMS? See Appendix 3

5. Click **Install Licensing**

6. Click **Finish**

Client installation of Creo

1. Start **setup** on the client machine

2. Select **Install New Software**

3. Accept License agreement

4. Type **7788@HOSTNAME** in the field at the bottom under license summary where HOSTNAME is the name of the server where you installed the PTC License Server.

5. On the next screen, **deselect MKS**

6. Optional - Installation of Advanced Framework Extension

   a. On the Application Selection page, click on **Customise**. In the list of applications select **Creo Parametric** and the tick/check the **Advanced Framework Extension** option. Click **OK** and continue the installation. Note: You must also add the AFX option in config.pro.

7. Click **Install**

Configuration

1. Once successfully installed, use Windows explorer to view the folder:
   C:\Program Files\PTC\Creo 2.0\Common Files\M050\creo_standards

2. Double click on the file **configure.bat** and follow the instructions to configure Creo for the drawing standards and units of measurements you require. In the UK, choose option 4 to set mm,kg,sec and BS8888 drawing standards.

3. Double click on the file **plms4schools.bat** to configure Creo Learning Connector for schools.

4. Run Creo and additional applications like Thumbnail viewer will be installed.

5. Optional - Advanced Framework Extension – If you have installed this module it must be enabled in the config.pro.

    a. Use Windows Explorer to view the folder:
       C:\Program Files\PTC\Creo 2.0\Common Files\M050\text\
    b. Open the **config.pro** file using Wordpad.
    c. Add the following line to the bottom of the file.
    d. **afx_enabled YES**
    e. **Save** the file and close Wordpad.
    f. Restart Creo Parametric and when an assembly is open you should see the Framework tab.

You can now use Creo 2.0

Note: The file **ReadThisFirst.PDF** in the install DVD/temporary folder contains information on PC specifications and further details about installation and configuration.

Support - If you have problems installing Creo you can get support here:
http://www.ptc.com/company/community/education/support/

Appendix 3 – Installation problems

Licensing login greyed out

Security on computers and networks can prevent access to the licensing login fields. They may be greyed out and not accessible. When installing new software including Creo, firewalls and antivirus protection should always be temporarily disabled. This may allow access to the login fields.

Recent versions of Windows have introduced Microsoft Essentials "real time protection". This can also prevent access to the licensing fields and should be disabled to allow access to the licensing log in.

If you still cannot access the licensing log in fields you can create a license manually using the following process.

Web form licensing

Capturing the computer Host ID/MAC address

1. Download, unzip and run this app on the PC/Server. It will report your computer's Host ID. http://apps.ptc.com/schools/Get_HostID.zip

2. Make a note/copy to clipboard the 12 digit Host ID.

3. Go to the link below for the edition and type of license that matches the product code you have been given.

    Single seat - www.ptc.com/go/singlelicense4creo2

    Network license server - www.ptc.com/go/lablicense4creo2

6. If necessary, log in using your www.ptc.com login.

7. Paste your product code into the appropriate field

8. Type in/paste the host ID from step 2 in the appropriate field

9. Complete any other required fields and submit the form.

Within two hours you will receive an email with your license attached.

10. Copy the license file to the server/Creo install computer

11. Run the install and at the licensing screen drag and drop the license file into the SON/Product Code field.

12. Complete the installation following the previous installation instructions for single seat/network.

Creo won't run for student login

On some networks including RM, the default user profile does not allow scripts to run.

For Creo to work, the user profile must be altered allowing scripts to run. This is usually done in group policies.

32 bit Windows XP configuration

On 32 bit operating systems running Windows XP the "configure.bat" does not work.

This can be fixed with the instructions below **or** by replacing the configure.bat file with a new file available from schools@ptc.com

- Copy from (64bit system): C:\Windows\SysWOW64\choice.exe
- To (32bit system): C:\Windows\System32\choice.exe

D:\Users\tbrotherhood\Documents\01 Popular docs\PTC Schools Programme 2013.docx