School of **Computing**, **Engineering** & Digital Technologies

Learning Resources & Facilities



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Introduction

The School of Computing, Engineering & Digital Technologies at Teesside University is a centre of excellence across engineering, computing, games and animation, media, communications and the digital arts.

Our specialist engineering, digital production facilities and specialist teaching studios cover a range of disciplines and are all at the forefront of digital and technological innovation.

Our engineering laboratories include designated areas for aerospace engineering, civil engineering and the built environment, computer-aided design and manufacture, power plants, control systems and automation, electrical engineering and telecommunications. We also have specialist pilot plant facilities for chemical and mechanical engineering.

Computing Laboratories and Studios

We have more than 30 networked laboratories and studios across various buildings (Athena, Europa, Mercuria, Parkside, Phoenix, Stephenson, and Waterhouse) equipped to industry standards and running the very latest industry software. Dedicated facilities are provided for specialist areas such as animation & visual effects, computer science, concept art, digital media, film & television, photography, music & performance, games design and programming, computer networks and postproduction (a comprehensive list of all our teaching space/studios can be seen in Appendix 1).

Software available in these studios range from generalpurpose applications and programming tools to specialist packages (a full list of software can be found in Appendix 2). on Anna is a sur



Aurora House Television Studio

The larger of our two TV studios provides a live High Definition TV broadcast studio environment and vision gallery. The studio floor is equipped with three broadcast cameras, Autocue hoods, a motorised Jib Arm, LED lighting rig, chroma green screen capability and a soundproof audio booth.

Our live TV studio is equipped with the Tricaster studio control software and manages the various live camera feeds from the studio floor, can produce virtual sets (using green screen keying), takes external online sources and can connect with our second TV studio (located in the Athena Building). All this hardware and software combined, allows users to produce high-end ambitious live broadcasts that can be streamed to various online sources (including YouTube and Facebook live).



Aurora House

Aurora House offers staff and students access to technical support for our programmes and facilities, our kit hub (and online equipment/ resource booking system), specialist Media production facilities, our TU-Can digital studio, TU-Xtra broadcast studios and our in house research and developer team.

The facility boasts a range of specialist media facilities too, including; television studios, radio studios, post-production video/ audio editing facilities and equipment hire.

TV News Studios

Our HD TV News Studios provide students with a live multicamera production environment, allowing for live streamed broadcasts. Utilising the Tricaster system, our HD studios comprise a studio production gallery, audio gallery (complete with post production audio editing facilities), a voice-over booth and a live studio floor equipped with three cameras.

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Sound Stage & Recording Studios

Located in the Phoenix Building is our state-of-the-art two-storey soundstage measuring 8m x 6m as well as a professional Sound Recording Studio which are among the best in the UK.

We have a top class, track based computer controlled camera system which is capable of creating amazing visual effects – from simple crowd duplications, to highly detailed complex artificial live action sequences.





Ground Floor Post-Production & Colour Grading Suites

Aurora house offers six self-contained post-production edit suites, complete with air-conditioning. These individual suites provide students with a comfortable space to complete post-production projects. These suites are bookable via the Facilities and Resources page (https://scedt-apps.tees.ac.uk).

Each suite comprises of an iMac, 40-inch UHD monitor and stereo sound system.

Post-Production software includes:

- Adobe Creative Suite
- Final Cut Pro X
- Davinci Resolve

Students have access to shared network storage across all our Media PCs and Macs in the form of EditShare. This allows the user to open, edit, playback and render large media files on any connected workstation in Aurora house, the Athena TV studio, and the Athena EditShare studios. Students are provided with this shared space for the duration of their programme of study.

Three of our ground floor edit suites incorporate a Colour Grading facility. These studios accommodate video editing, post-production, compositing and colour correction. It can then be encoded and mastered into as many formats needed for delivery, such as H.264 for Blu-Ray or DCP for cinema.

Aurora House Reception - Kit Hub

Our main reception and Kit Hub is where students and staff come to collect any bookable equipment and resources available within the school. We offer a wide array of industry standard broadcast media and computing equipment. All equipment is made available through our online booking system, Connect2 (https://scedtbookings.tees.ac.uk). Before collecting any kit, students are required to complete an online risk assessment, which is authorised by a tutor. The technical team are also on hand in the reception area of Aurora House. Here you can ask for assistance with software and hardware, book tutorials or any other support needs you may have.

TU-Xtra Radio Studios

Two radio studios provide broadcast for tuxtra.co.uk, the campus online media platform, developed to support media programmes across the school. TU-Xtra broadcasts 24/7 during term time.

There are three studios. Studios 1&2 provide live broadcasting and newsgathering while Studio 3 manages scheduling and automation for broadcast.

Studio 1 contains two live PTZ cameras, allowing the radio studios to become live TV studios, which are vision mixed from a production gallery in studio 2 using the Tricaster system. Each of the studios is complete with Industry standard radio playout and scheduling software. Studios are complete with four microphone channels, telephone lines, playout software, newsgathering and automation software, CD decks and Aux inputs. Each studio is connected to allow for simulcast broadcasting.

Recording Studios

Our Sound Recording facilities include the Avid DigiDesign 32 track mixing console and DigiDesign's award winning ProTools HDX software which is regularly used on music productions, movies, television dramas and features. 冒

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Music Technology Lab

Our specialist lab, developed to teach our Music Technology programme, provides students with the very latest digital audio production, sequencing and composition software and hardware. The lab provides access to Pro-Tools, Sibelius, Ableton Live, Reason and a range of audio interfaces, instruments and music production tools.

Newsroom

The Convergent Newsroom provides students with a live 'newsroom' teaching environment. Workstations are equipped with shared network storage utilising the Editshare network and have access to the latest video, audio and web editing platforms.

Video Production Mac/PC lab

This Mac/PC lab, offers a range of video and audio production software. Equipped with shared network storage, students can access and edit video and audio projects. Workstations are equipped with the Adobe Creative suite and Final Cut Pro post-production software. Ktra NEWS SPORT RADIO

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Games Programming Studios

Our Games Programming Studios create a place for students to work with dedicated workstations and dual monitors. It includes Microsoft Visual Studio and the Unity and Unreal engines, along with XBox controllers and high performance graphics hardware to enable students to develop computer games for desktop PCs or mobile devices.

Concept Art Studio

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The Concept Art Studio is a dedicated teaching space for our Concept Art students. The studio includes 24 student workstations and 1 tutor workstation each with a 22" WACOM Touch Cintiq and one standard 24" monitor. The students have access to a range of drawing software such as Clip Studio and Corel Painter as well as Adobe Photoshop CC.

Games Studios

There are six dedicated Games Studios in the Athena Building each housing 20 student workstations and 1 tutor workstation with dual widescreen monitors and drawing tablets. Some of the studios include games controllers. This provides students with a friendly open studio environment where they can work as individuals or in small teams. AV Facilities are available for peer presentation of work and students delivering group talks as part of team based modules such as the Journeyman Project.



Motion Capture Studio. Vicon Optical Camera System

The MoCap Studio is adjacent to the VR Studio. Here you will find some of the best motion capture equipment available in the UK.

Motion capture, or mocap, is a term used to describe the process of recording human movement for use in animations and games.

18 Infrared cameras fixed around the room capture the movement of reflective markers. These are accurate to approximately 2mm and can handle fast and complex movements. There are six suits of different sizes, and multiple-person capture is possible.

The system is not restricted to human subjects/actors. For example, the School has captured data from dogs.

The room also boasts a range of other devices such as laser scanners and a 3D printer.

2D Animation Studio

Our 2D stop frame animation studios are equipped with six animation studios. Each workstation is 2.3m x 2.3m made up of its own magnetic animation table, tri-colour infinity curve backdrops, Dedo LED lighting rig and Canon 5D Mark IV capture camera with interchangeable lenses all of which connects to a 27 inch iMac complete with DragonFrame motion capture software and the Adobe Creative suite.

There is also an additional area for model making and prop building.

Games Corner

A number of games consoles are available in this area. The School of Computing, Engineering and Digital Technologies has procured a variety of computer games that students can sign out from the Media Centre (Aurora House) to test, evaluate or simply play in this lounge.

PC/Linux Studio

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This studio is configured to be dual boot (windows and linux) and includes a combination of software tools that are currently available in our Linux studios and Windows studios.

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Animation and Visual Effects [AVFX] Studios

Each studio has 20 student workstations and 1 tutor workstation, each with dual widescreen monitors and drawing tablets providing students with a dedicated and inspiring environment to produce 2D and 3D animation & VFX from the pre-production stage right through to post-production. Students have access to the latest versions of industry standard software such as Autodesk Maya, Nuke and Houdini. Pluralsight, an online learning support tool is also available.

The AVFX Suite also has a dedicated screening/meeting room for up to 12 people. Staff and students meet here to screen work and provide feedback on work in progress.

VR & Photogrammetry Studio

VR headsets provide an immersive view of a 3D environment or game.

The user can interact with the environment using game controllers, and can look around by moving their head. Sensors in the headset track their position and gaze direction, although movement is limited by trailing cables.

The VR Studio currently has eight HTC Vive headsets with the latest SDK available for student use. The studio also houses a photogrammetry suite for the high resolution photography of real life objects for use in virtual 3D spaces.

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TUCan Studio

An innovative production studio bringing together multidisciplinary groups of Teesside University staff, graduates and students together under one roof to work on commercial digital projects for our external partners.

Based in the School of Computing, Engineering & Digital Technologies, we have expertise spanning across numerous creative digital areas including animation, media production, software and web development, VR and augmented reality experiences.

Together we can work with you to develop new products, proof of concepts or cutting edge research whilst giving our talented students the opportunity to develop essential work ready skills.

Live projects undertaken by the studio include AR and VR app development, video production, 360 immersive production, web design and software development. The studio can be found online at www.tucanstudio.co.uk

Lecture Theatres

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The department has several large lecture theatres with capacities up to 300 for teaching and as a venue for annual events such as the Animex Conference.

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Drawing Studios

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Life drawing takes place in the airy, open plan Drawing Studio and consists of a mixture of male and female life models supported by a tutor.

Tables, easels, drying racks, drawing boards and A2 grey board and A3 cartridge paper are all readily available along with a range of art materials such as acrylic and watercolour paints, putty rubbers, graded drawing pencils, coloured pastel sticks, graphite sticks, charcoal and specialised animation drawing pencils. Still life objects are available for compositional drawing.

In the adjacent room we have a second drawing area. This studio is also used as a wet room space with large tables and double sinks allowing students to create models out of clay.

Traditional Animation Studio

This dedicated space has a small number of Epson GT Pro A3 scanners connected to computers running ToonBoom Harmony software for digital 2D animation. We also have 20 A3 light boxes available for students to use.

Comics Studio

The Athena building is home to the comics lab, developed to teach students various forms of creative disciplines relating to comics and sequential design.

Final Year Studio

There is a dedicated computer studio for our final year students to use to aid them during their final and project year. This studio contains a mixture of platforms (Windows, Linux, Mac) and software from each of the studios across the school.

A complete list of software is available in the studio instructing which machine it is installed on.

Linux Labs

We have two Linux labs mainly used by the CS&IS department, here students have access to many open-source packages and development tools for various programming modules.

Web, Programming and Database Studios

These studios allow students to develop information system applications for Microsoft platforms, Web Application development and creation of rich internet applications. They include the latest Visual Studio and SQL Server software and a suite of software that is centred in the Open Source Development area.

Digital Media and Web Studio

A studio dedicated for the area of Digital Media and Web and is currently setup for a mixture of Android Software Development, Web App Production, and creative design. The area contains 20 student workstations and 1 tutor workstation, each with dual widescreen monitors and drawing tablets.

Digital Media Studio and Collaborative Learning Environment

A Digital Media and Web Studio that affords group working. Its software is primarily focused on design and creativity with breakout areas for group discussion. Students undertaking Computer Science modules also have access to this studio for group work, meetings and presentations.

Network Studios

Students can access our dedicated Networks Studios including a Hardware and Communications working area with Cisco Swtiches and Routers and a variety of wireless and other networking equipment. This area is behind a local firewall which allows students to configure servers and other hardware without exposing the whole university to potential security risks. The controlled environment enables Cybersecurity students to set-up test systems and conduct vulnerability assessments and penetration tests. The Network Studios also have a range of open source electronics prototyping platforms (Arduino and Netduino) for students to use with computing technology and embedded systems modules.

Freelance Area

Our Freelance area contains mainly Windows PCs with a small number of Apple iMAC's. Software available includes the Adobe and Autodesk suites. This area is also used for those students involved with the LEGO competitions.



Flight Simulation Laboratory

This laboratory contains a MP521 Merlin Engineering Flight Simulator and a MP500-1 Air Vehicle Design / Development Simulation System. A facility in which students can design an aeroplane and test it in flight simulation. Also included in this laboratory is an extensive range of equipment which is used to develop and enhance the process engineering skills of students.

Thermofluids Laboratory

Includes Heat Exchangers, Fluid Friction Measurement, Pressure drop apparatus, Chemical Reaction equipment, Flow in Pipe Networks, Armfield Flume, S3 Tilting 3M Long, Hydraulic Benches.

Civil Engineering and Built Environment Laboratory

Materials / Structure / Equipment Testing Facility, 5 T Overhead Crane and a strong floor fitted with securing points. Enables full scale structural testing (ie. Bridge Sections). Includes Universal Testing Machine, Dennison T42B / 7614.

Universal frames and Stands, structure forces, beam forces, torsion, shear, Triaxial Test Apparatus, Compressive Strength of Rock Test Loading Frame.

> No unauthor person to operate this machine

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Electro-technology Laboratory

This laboratory contains an automated assembly system plus modular experimental equipment which includes a wide range of electrical equipment, instrumentation, sensors and signal conditioning experiments.

Control Systems Laboratory

This laboratory has numerous computer interfaced control systems with up-to-date instrumentation. It has leading industry software, Matlab, which is used for a large proportion of the control, linear systems, instrumentation and project work. Teamed with real-time control executive Simulink and a range of specialist tool-boxes, it is linked to analyse and synthesise real-time control of physical systems.

SCADA Laboratory

A SCADA (Supervisory, Control and Data Acquisition) Delta V system is installed in this laboratory, the SCADA system is industry standard equipment used extensively for controlling power stations and major chemical plants.

Electronics and Communications Laboratory

This laboratory is a facility for the design and testing of analogue and digital systems for electronics. The laboratory includes analogue, digital electronic experiments and communication systems.







Power Engineering Laboratory

Electrical / Electronics: Contains Power engineering equipment which allows students to explore the practical aspects of power generation and distribution systems including smart grids, renewable energy sources, real time embedded control systems. The facility replicates characteristics of major power stations and wind generation facilities.

Computing Laboratories in Stephenson building

The School has a number of computer laboratories, these computers are used for both timetabled and freelance activities.

In addition there are many computers linked to equipment in the specialist laboratories. The computers are equipped with general and specialised software.

Engineering Projects Laboratory

Formula Student: A laboratory in which students can undertake practical work associated with the design, manufacture and assembly of a racing car. This includes a formula student car.

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Electric Motorbike Project: A team of students are designing, developing and converting a petrol engine motorbike into an electrically propelled motorbike.

Aerospace: A laboratory in which students can undertake practical work associated with aerospace engineering. Contains an Aeroplane built in the 1980s which has not yet flown, however it is intended to have this aeroplane approved for flight in approximately 18 months.

G-BAMG

Mechanical Science Laboratory

This specialised facility includes a 3D scanner, VisEng photo-elastic stress analysis equipment, universal mechanical experiments, bending and shear stress equipment, viscosity experiments.



SEM Laboratory

This Hitachi scanning electron microscope is used extensively for research and project work. The laboratory also includes materials characterisation equipment, EDX, XRF.

Applied Materials Laboratory

The Applied Materials laboratory has an extensive range of materials preparation and testing equipment. These facilities allow students the opportunity to develop the skills and expertise in materials and their applications. The laboratory includes Instron testing machines, universal testing machines, Vickers hardness testing machines, Manumould injection moulding machines, microscopes, small furnaces, polymer processing equipment, X-ray diffraction, surface roughness experiments, 3D printing and laser cutting.





Engineering Workshop and Foundry

A general engineering, machining, fabrication and foundry facility. In which students develop their skills and understanding of engineering machine tools, fabrication and foundry work. Students then have the option of using these facilities to complete aspects of practical project work. Includes CNC Lathe, CNC Milling Machines, Drilling Machines, Fabrication Equipment.

A metal casting facility is also located in this laboratory, this facility is used to develop the skills and understanding of mould preparation and aluminium casting techniques. Includes a Flame fast CM350 crucible furnace and extraction unit, metal moulds and associated hand tools.

Distillation Process Laboratory

Includes Methanol / Water pilot scale Distillation columns and an Absorption column.

Oil and Gas Engineering Laboratory

A specialist laboratory which is equipped with enhanced oil recovery, core analysis equipment and Surface characterisation. The facilities allows the study of the properties of rocks, particularly the measurement of porosity and evaluation of fluid flow through porous media. Includes Zeta Analyser (rock surface analysis), Mud Measuring equipment (density, rheology, filtration), Helium Porosimeter, Gas Permeameter, age), Unsteady State Permeameter System and a Quantachrome BET Analyser.





Process Laboratory

Ethanol Bio Reactor, a Retort Pasteuriser and a Water Treatment Plant.

Multi-phase Separation Laboratory

This laboratory includes a multi-phase separation unit.

Research Laboratory

The Hydrogen project and a number of advanced materials applied research projects are undertaken in this laboratory.

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Appendix One: Studios & Laboratories

Athena

AG.06	Convergent Newsroom (PC Lab)
AG.09	Broadcast News Studio
AG.10a	Sound Control (Connected to TV
	Control & Broadcast News Studio)
AG.10b	TV Control (Connected to Sound
	Control & Broadcast News Studio)
AG.11	Media Production Lab
AG.12	Athena Edit Lab
A2.01	Comics
A2.03	Stop Motion
A2.05	Games Studio
A2.06	Games Studio

Aurora

AU1.04	TUCan Studio
AU0.05	Aurora TV Studio

Stephenson

- IC0.18: Enterprise Laboratory.
- IC0.19: Civil Engineering / Built Environment Laboratory.
- IC0.26 / 0.28, Engineering Workshop and Foundry
- IC0.33: Electro-technology Laboratory.
- IC0.34: Control Systems Laboratory
- IC0.35: SCADA Laboratory
- IC0.37A Flight Simulation
- IC0.37B Thermo-fluids Laboratory
- IC0.38 Mechanical Science Laboratory
- IC0.39 SEM Laboratory
- IC0.42 Applied Materials Laboratory
- IC0.47A Engineering Projects Laboratory (Formula Student, Electric Motorbike & Aerospace)

IC0.47B Power Engineering Laboratory

A2 07	Concept A	

- Games Studio A2.08
- A2.09 Games Studio
- A3.02 Linux Studio & Digital Media Programming & Database Studio
- A3.04 Stop Motion
- **Drawing Studio** A3.05
- **Drawing Studio** A3.07
- A3.08 Digital Media Programming and Database Studio with Editshare.
- A3.09 Games Studio
- A3.10 Games Studio

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Meeting Room

- IC1.01a Animation and Visual Effects Studio + Games Studio
- IC1.01b Animation and Visual Effects Studio
- IC1.01c Animation and Visual Effects Studio
- IC1.01d Meeting Room (Screening room)
- IC1.60 Motion Capture
- IC1.61 Virtual Reality
- IC1.63 Computer Laboratory
- IC1.65 Computer Laboratory
- IC1.69 Electronics and Communications Laboratorv
- IC1.72 Computer Laboratory
- IC1.73 Computer Laboratory
- IC1.76 Computing Laboratory
- IC1.77 Digital Media Programming and Database Studio

Europa

T0.11	Final Year Studio
T0.13	MAC Studio
	(Mobile Programming)
T0.15	Linux Studio
T0.31	Traditional Animation Studio
T1.08	Digital Media Programming
	and Database Studio
T1.10	Digital Media Programming
	and Database Studio
T1.11	Linux Studio
T1 30	Freelance Studio

Mercuria

MC0.04 Hall MC0.06 Dance Studio MC0.10 Music Studio

Middlesbrough Tower

M8.04	Hydrogen Project /
	Research Laboratory
M10.08	Research Laboratory

Orion Building

- CE0.01 Distillation Process Laboratory
- CE0.02 Process Laboratory
- CE0.03 Open Access Computer Laboratory
- CE1.01 Distillation Column Laboratory
- CE1.02 Oil and Gas Engineering Laboratory
- CE1.03 Open Access Computer Laboratory
- CE1.13 Computer Laboratory
- CE1.20 Process Engineering Laboratory
- CE2.01 Distillation Column Laboratory
- CE2.02 Multi-phase Separation Laboratory.
- CE2.03 Open Access Computer Laboratory

IT1.35 Freelance Studio IT1.31 Digital Media Programming and Database Studio IT1.34 Collaborative Learning Environment Studio IT2.34 Networks Studio IT2.41 Networks Studio IT2.42 Networks Studio Concept Art Studio OL3 OL8 Games Programming Studio OL9 Games Programming Studio

Phoenix

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.07	Music Lab
.16	Sound Stage
10	Postgraduate Studio –
	Concept Art
11	Postgraduate Studio

Parkside West

PSW0.22	Dark Room
PSW0.13	Photography Studio 1
PSW0.14	Photography Studio 2

Waterhouse

- W2.01 Performance Prep Space
- W2.02 Performance for Live & **Recorded Media Studio**

Appendix Two: Teaching Software

PC
3D Coat
Adobe Acrobat DC
Adobe After Effects
Adobe Animate CC
Adobe Audition CC
Adobe Character Animator CC
Adobe Dreamweaver CC
Adobe Fireworks
Adobe Fuse CC
Adobe Gaming SDK
Adobe Illustrator CC
Adobe InDesign CC
Adobe Lightroom Classic CC
Adobe Photoshop CC
Adobe Premiere Pro CC
Allegro Common Lisp
Android Studio
Arduino
Atom
Audacity
Autodesk 3DS Max
Autodesk Maya
Autodesk MotionBuilder
Autodesk Mudbox
Blender
Boost
Burli
Celtx
Chrome
Cisco Packet Tracer Student
Clip Studio
Code Composer Studio
Code::Blocks
CoqIDE
Corel Draw
Corel Painter
CrazyBump
Cryptophane
Dia
Docker CE
DosBox

Doxygen Eclipse IDE EditShare Connect Fiddler Final Draft Firefox Flowgorithm FreeMind Fusion Gimp Git GitHub GitKraken GNAT GPL GNS3 Houdini Hugin IntellJ Idea Java SE Development Kit Katalon Studio Katana Logisim Lua Mari Mendix Business Modeller Microsoft SQL Server Microsoft SQL Server Management Studio Microsoft Visio Microsoft Visual Studio Microsoft Visual Studio Code MockFlow Wireframe Pro Modo Netbeans IDE NetLogo Node.js Nuke Nunit **OBS** Studio **Oculus Rift** OMNeT++ **Open Toonz**

Paint.net PHP Storm Powermill Processing IDE PuTTY PyCharm Python Qube R3.5.0 RenderMan ReSharper **Riverbed Modeler** RV Sculptris Sellerdeck Shogun Post sIBL GUI SimVenture Skype SolidWorks SourceTree SPSS StarUML Steam Substance B2M3 Substance Designer Substance Painter TeX I ive Toon Boom Harmony Topogun **TortoiseSVN** Trelby Twine Unity Pro Unreal Engine Vagrant VirtualBox Web Storm WinSCP Xmind xNormal ZBrush

Mac

Ableton Live Adobe Master Collection CC Android Studio ATOM Text Editor Audacitv Autodesk Entertainment Creation Suite Autodesk Maya Blender Burli Chrome ChucK Clip Studio Paint Corel Painter DragonFrame EditShare Connect Firefox Garageband Git Handbrake imovie Java SE Development Kit Keynote LibreOffice Microsoft Visual Studio Enterprise Mudbox Numbers **OBS** Studio Microsoft Office for Mac Pages PostgreSQL Production Collective - Nuke, Mari, Modo Pure Data RackSynth by VCV Reason Sibelius SketchUp Make Skype Spear TextWrangler The Unarchiver Toon Boom Harmony Xamarin Studio Xcode Zbrush

Linux

Android Studio ATOM Text Editor Autopsy CoqIDE Eclipse Fiffel Elixir Erlang FDR Git GitKraken GNAT Ada GNAT GPI **GNU Emacs** Gnuplot Handbrake Haskell Isabelle Java SE Development Kit Kate OpenSSH **OpenSSL** Oracle VirtualBox LibreOffice Mono Netbeans Octave **Open Broadcaster Studio** Opera PAT Probe Processing IDE PVS Rodin SBCL Scala SFML Sleuthkit Skype Subversion telnet tmux Vagrant Wireshark XMaxima

Please contact the School of Computing, Engineering & Digital Technologies on 01642 342631 or email scedt-enquiries@tees.ac.uk.

