|  |  |
| --- | --- |
| **Minor Award Name** | Physical and Logical Networking |
| **Minor Award Code** | 6N2093 |
| **Level** | 6 |

**Suggested resources to support delivery:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Theme/Topic** | **Type** | **Relevance** | **Author/Source** | **Web Link** |
| Reference | Website | **FOLDOC**The Free Online Dictionary of Computing: online since 1985, but lately no longer supported by Imperial College London. | Denis Howe | <http://foldoc.org/>  |
|  | Wikipedia† | **OSI Model** | Commons | <https://en.wikipedia.org/wiki/OSI_model>  |
|  | Wikipedia† | **Ethernet Frame** | Commons | <https://en.wikipedia.org/wiki/Ethernet_frame>  |
|  | Website | **Internetworking Technology Handbook** | Cisco | <http://docwiki.cisco.com/wiki/Internetworking_Technology_Handbook>  |
|  | Website | **Ethernet Technologies** | Cisco | <http://docwiki.cisco.com/wiki/Ethernet_Technologies>  |
|  | Website | **IANA IPv4 Address Space Registry** | IANA | <http://www.iana.org/assignments/ipv4-address-space/ipv4-address-space.xhtml>  |
|  | Website | **IANA IPv4 Special-Purpose Address Registry** | IANA | <http://www.iana.org/assignments/iana-ipv4-special-registry/iana-ipv4-special-registry.xhtml>  |
|  | Website | **Root Servers** | IANA | <https://www.iana.org/domains/root/servers>  |
|  | Website | **ICANN Registry Information** | ICANN | <https://www.icann.org/resources/pages/registries/registries-en>  |
|  | PDF | **Open Systems Interconnection: Basic Reference Model**ISO/IEC standard 7498-1:1994 | ISO | [http://standards.iso.org/ittf/PubliclyAvailableStandards/s020269\_ISO\_IEC\_7498-1\_1994(E).zip](http://standards.iso.org/ittf/PubliclyAvailableStandards/s020269_ISO_IEC_7498-1_1994%28E%29.zip)  |
|  | PDFs | **IEEE 802.3™: Ethernet** | IEEE | <http://standards.ieee.org/about/get/802/802.3.html>  |
|  | Posters | **Cheat Sheets**Collection of free to download networking posters/cheat sheets. | PacketLife.net | <http://packetlife.net/library/cheat-sheets/>  |
|  | Poster | **Networking Essentials Poster** | CCNA-Security.net | <http://www.ccna-security.net/wp-content/uploads/2008/12/networkingessentials.jpg>  |
|  | Website | **HEAnet Schools**Map and information on the HEAnet School Broadband Network. | HEAnet | <http://www.heanet.ie/schools>  |
|  | Website | **Switcher.ie**Sample broadband comparison website. | Forward Internet Ireland Limited | <https://switcher.ie/broadband/>  |
| Internet Maps | Website | **Ireland Offline Map**Map of broadband availability in Ireland. | IrelandOffline | <http://irelandoffline.org/map/>  |
|  |  | **Global Internet Map 2012** | TeleGeography | <http://global-internet-map-2012.telegeography.com/>  |
|  |  | **Root Servers in the World** |  | <https://www.google.com/maps/d/viewer?mid=zlG9ajNou0XE.kueIslroMXZQ>  |
|  | Website | **Internet Census 2012**“While playing around with the Nmap Scripting Engine (NSE) we discovered an amazing number of open embedded devices on the Internet. Many of them are based on Linux and allow login to standard BusyBox with empty or default credentials. We used these devices to build a distributed port scanner to scan all IPv4 addresses. These scans include service probes for the most common ports, ICMP ping, reverse DNS and SYN scans. We analyzed some of the data to get an estimation of the IP address usage.All data gathered during our research is released into the public domain for further study. “ | Carna Botnet | <http://internetcensus2012.bitbucket.org/paper.html>  |
|  | Website | **Submarine Cable Map**Mapping the world's undersea cables. “Data contained in this map is drawn from the Global Bandwidth Research Service and is updated on a regular basis.” | TeleGeography | <http://www.submarinecablemap.com/>  |
|  | Website | **Submarine Cable Map 2015** | TeleGeography | <http://submarine-cable-map-2015.telegeography.com/>  |
|  | Website | **Greg's Cable Map**“an attempt to consolidate all the available information about the undersea communications infrastructure“ | Greg Mahlknecht | <http://www.cablemap.info/>  |
|  | Website | **Nasa Interactive Satellite Tracker**Live satellite map and data. WebGL and non-WebGL versions. | Nasa | <http://science.nasa.gov/iSat/>  |
|  | Website | **SatBeams.com**Satellite maps and footprints. | Satbeams SPRL | <http://www.satbeams.com/>  |
|  | Website | **WiGLE**Collaborative WiFi map of the world. | bobzilla & arkasha & uhtu  | <https://wigle.net/>  |
|  | Website | **Norse Corp**Popular live global cyber-warfare map. “Every second, Norse collects and analyzes live threat intelligence from darknets in hundreds of locations in over 40 countries.” | NorseCorp | <http://map.norsecorp.com/>  |
|  | Website | **Digital Attack Map**“Digital Attack Map is a live data visualization of DDoS attacks around the globe, built through a collaboration between Google Ideas and Arbor Networks. The tool surfaces anonymous attack traffic data to let users explore historic trends and find reports of outages happening on a given day.” | Arbor Networks, Inc. | [http://www.digitalattackmap.com](http://www.digitalattackmap.com/)  |
| Video | Video | **Professor Messer's Networks+ Tutorials**Excellent video tutorials in a wide range of networking topics. | Messer Studios | <http://www.professormesser.com/network-plus/n10-006/n10-006-course-index/> <https://www.youtube.com/user/professormesser/>  |
|  | Video | **The New Boston**Networking tutorials. | Bucky Roberts | <https://www.thenewboston.com/videos.php?cat=44>  |
|  | Video | **Fiber optic cables: How they work** | Engineer Guy | <https://www.youtube.com/watch?v=0MwMkBET_5I>  |
|  | Video | **How It's Made: Fiber Optics**  | Discovery / Science Channel | <https://www.youtube.com/watch?v=u1DRrAhQJtM>  |
|  | Video | **EXFO Tube**EXFO's Animated Glossary of Fiber Optics | EXFO | <https://www.youtube.com/user/EXFOTube>  |
|  | Video | **Emerald Bridge Fibres Network****A view of cable laying across the Irish Sea.** | ESB Telecoms | <http://www.esbtelecoms.ie/emerald_bridge/overview.htm>  |
|  | Video | **The Telegraph Field - Valentia Island** | Telegraph Field Valentia | <https://www.youtube.com/watch?v=ywSJ7-Qri9w>  |
|  | Video | **American Experience: The Great Transatlantic Cable** | PBS | <http://www.pbs.org/wgbh/amex/cable/> <https://www.youtube.com/watch?v=cFKONUBBHQw>  |
|  | TV‡ | **Modern Marvels: Transatlantic Cable** | History Channel |  |
|  | Video | **How it's Made: Copper Communications Cables**  | Superior Essex | <https://www.youtube.com/watch?v=G1XKqYlDVfA>  |
|  | Video | **The new, larger version of the Internet: IPv6**  | Google | <https://www.youtube.com/watch?v=-Uwjt32NvVA>  |
|  | Video | **Explore a Google data center with Street View** | Google | <https://www.youtube.com/watch?v=avP5d16wEp0>  |
|  | Video | **Networking 101** | Cisco | <https://www.youtube.com/playlist?list=PL2D6D953CAEEA70A6>  |
|  | Video | **GNS3 Talk**“This channel is for﻿ those who want to use GNS3 efficiently.” | Cisco Engineers | <https://www.youtube.com/user/GNS3Talk>  |
|  | Video | **AT&T Tech Channel**“The AT&T Tech Channel is your source for originally-produced videos about the past, present and future of the world of technology. From the depths of tech history to the latest in Cyber Security, you'll find something to feed your inner geek at the AT&T Tech Channel. “ | AT&T | <http://techchannel.att.com/><https://www.youtube.com/user/ATTTechChannel>  |
|  | Video | **TED Talks**“TED is a nonprofit devoted to spreading ideas, usually in the form of short, powerful talks (18 minutes or less).” | TED Talks | <http://www.ted.com/topics/technology> <http://www.ted.com/topics/internet>  |
|  | TV | **NerdTV**Free online interviews with technology pioneers (2005-2006). | PBS | <http://www.pbs.org/cringely/nerdtv/shows/>  |
|  | TV‡ | **BBC Horizon: Shock and Awe: The Story of Electricity** | BBC | <http://www.bbc.co.uk/programmes/p00kjq6d> <https://www.youtube.com/watch?v=Gtp51eZkwoI>  |
|  | TV‡ | **The Genius of Invention: Communication** | BBC | <http://www.bbc.co.uk/programmes/b01qb0p5> <https://www.youtube.com/watch?v=PIf0FmLr_Ww>  |
|  | TV‡ | **In Orbit: How Satellites Rule Our World** | BBC | <http://www.bbc.co.uk/programmes/b01f6qpq><https://www.youtube.com/watch?v=u2gXKJKtl3U>  |
|  | TV‡ | **BBC Horizon: Inside the Dark Web** | BBC | <http://www.bbc.co.uk/programmes/b04grp09><https://www.youtube.com/watch?v=zson_MHvlMc>  |
|  | TV‡ | **BBC Panorama: How Hackers Steal Your ID** | BBC | <http://www.bbc.co.uk/programmes/b06pnlpy><https://www.youtube.com/watch?v=saHwL_hj7pQ>  |
|  | Movie | **Deep Web (2015)**“A feature documentary that explores the rise of a new Internet; decentralized, encrypted, dangerous and beyond the law.” | Alex Winter | <http://www.imdb.com/title/tt3312868/>  |
| Podcasts | Podcast | **Computing Britain**“Hannah Fry looks back at 75 years of computing history to reveal the UK's lead role in developing the technologies we rely on today.” | BBC | <http://www.bbc.co.uk/programmes/b06bq6j1/episodes/downloads>  |
|  | Podcast | **Digital Human**“Aleks Krotoski explores the digital world.” | BBC | <http://www.bbc.co.uk/programmes/b01n7094/episodes/downloads>  |
|  | Podcast | **Click** “Technological and digital news from around the world.” | BBC | <http://www.bbc.co.uk/programmes/p002w6r2/episodes/downloads>  |
| Tutorials / Guides | Website | **NMap Tutorial** | Andrew J. Bennieston | <https://nmap.org/bennieston-tutorial/>  |
|  | Website | **The Tor Project**Tutorial on the reasons for the Tor Project and on how Tor works. A practical exercise for discussing Internet freedoms and privacy. | The Tor Project | <https://www.torproject.org/about/overview.html.en>  |
| Open Courseware | Lectures | **MIT Open Courseware: Electrical Engineering and Computer Science** | MIT.edu | <http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/>  |
|  | Lectures | ... Computer Networks | MIT.edu | <http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-829-computer-networks-fall-2002/lecture-notes/>  |
|  | Lectures | ... Networks and Computer Security | MIT.edu | <http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-857-network-and-computer-security-spring-2014/lecture-notes-and-readings/>  |
|  | Lectures | ... Data Communication Networtks | MIT.edu | <http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-263j-data-communication-networks-fall-2002/lecture-notes/>  |
| Books | Website | **Linux Network Administrator's Guide, 2nd Edition**Part of the O'Reilly Open Book collection at <http://www.oreilly.com/openbook/>  | Olaf Kirch & Terry Dawson | <http://www.oreilly.com/openbook/linag2/book/index.html>  |
| IPv6 |  | **Google IPv6**IPv6 information site. | Google | <https://www.google.com/intl/en/ipv6/>  |
|  |  | **IPv6 Test**“IPv6-test.com is a free service that checks your IPv6 and IPv4 connectivity and speed. Diagnose connection problems, discover which address(es) you are currently using to browse the Internet, and what is your browser's protocol of choice when both v6 and v4 are available.” | ipv6-test.com | <http://ipv6-test.com/>  |
| Maths | Website | **Hexadecimal Decimal Binary and Octal Converter** | Vimtech Ltd | <http://calc.50x.eu/>  |
|  | Website | **IP Subnet Calculator**Just one of the many online subnet and VLSM calculators available online or as apps and desktop applications. Useful for double checking calculations. | Sohopen.co.uk | <http://www.subnet-calculator.com/>  |
|  | Website | **VLSM (CIDR) Subnet Calculator** | Novgorod State University | <http://www.vlsm-calc.net/>  |
| Devices & Cabling | Websites | Perhaps one of the best ways to explore the real world for devices and cabling is to explore options and prices in the stores. Amazon, eBay, and Maplin, etc., are probably familiar to everyone. CableMonkey.ie may not be so familiar but has proved a good source for cable specifications and pricing. Samples of cabling and connectors are of course useful for the classroom. |  | [http://amazon.co.uk](http://amazon.co.uk/) [http://ebay.ie](http://ebay.ie/) [http://maplin.ie](http://maplin.ie/) [http://cablemonkey.ie](http://cablemonkey.ie/)  |
|  | Hardware | Not a downloadable resource, but worth listing anyway.The networks teacher will benefit from a number of basic devices (hubs, switches, and routers) and tools (multimeter, crimping tool, wire-stripper) and well as supplies of sample cable.A range of devices can be useful alongside use of virtual machines and labs whenever available: Android and iOS phones, tablets and TV dongles, games machines, Apple, Linux and Windows PCs.The Raspberry PI in particular is ideally suited to a multitude of networking and IT projects.A compass or a mobile phone compass/metal detector app can be a useful illustration of EMI. |  | [http://amazon.co.uk](http://amazon.co.uk/) [http://ebay.ie](http://ebay.ie/) [http://maplin.ie](http://maplin.ie/) [http://cablemonkey.ie](http://cablemonkey.ie/) <https://www.raspberrypi.org/>  |
| Modelling Tools | Software | **Pencil**Cross-platform, free and open-source drawing tool. | Evolus | <http://pencil.evolus.vn/>  |
|  | Software | **Dia**Cross-platform, free and open-source drawing tool.  | The Dia Developers | <http://dia-installer.de/>  |
| Network Tools | Website | **Hea.net**Access to statistics and information on the Heanet external connections, backbone and networks – including schools broadband – and “Looking Glass” online testing tools. | HEAnet | <http://www.hea.net/>  |
|  | Website | **SpeedTest.net**Visual speedtest and comparison tool. | Ookla | <http://www.speedtest.net/>  |
|  | Website | **SpeedOf.me**HTML 5 alternative to SpeedTest.net | SPEED OF ME | <http://speedof.me/>  |
|  | Website | **IP Chicken**Get your router's external IP address. | IPChicken | <http://www.ipchicken.com/> |
|  | Website | **Info Sniper**Attempt to geolocate an IP address. | infoSNIPER.net | <http://www.infosniper.net/>  |
|  | Website | **Visual Traceroute**Illustrate Internet routing from a set of testing servers. | VisualRoute | <http://visualroute.visualware.com/>  |
|  | Website | **HWAddress**Lookup MAC addresses and companies. |  | <http://hwaddress.com/>  |
|  | Software | **Bping**Audible ping alternative for Windows. Useful and fun for the classroom when testing connections – especially between rooms. | wrybread@gmail.com  | <http://gizmoware.net/bping/>  |
|  | Software | **WireShark**Cross-platform free open-source network (wired and WiFi) passive wire sniffing tool. Perfect educational tool for parsing the Ethernet frame. | Wireshark Foundation  | <https://www.wireshark.org/>  |
|  | Software | **TCPDump**Free open-source cross-platform command-line alternative to WireShark. | Tcpdump/Libpcap | <http://www.tcpdump.org/>  |
|  | Software | **Fing**Free Android app. Scans network and machine services. | Overlook | <https://play.google.com/store/apps/details?id=com.overlook.android.fing>  |
|  | Software | **Wifi Analyzer**Free Android app. Monitors wifi signals/channels. | farproc | <https://play.google.com/store/apps/details?id=com.farproc.wifi.analyzer>  |
|  | Software | **LinSSID**LinSSID is “graphically and functionally similar to *Inssider*” (commercial Windows software from MetaGeek.com). | wseverin | <http://sourceforge.net/projects/linssid/>  |
|  | Software | **NMap**Cross-platform, free and open-source "Network Mapper" network mapping/scanning tool. Command-line and ZenMap graphical user interface. (Note that nmap is an active tool and its scans are not necessarily legal or safe except on a network where you are explicitly permitted to do so.) | Insecure.org | [https://nmap.org](https://nmap.org/)  |
|  | Software | **Kismet**Linux free open-source passive wifi monitoring tool. “Kismet is an 802.11 layer2 wireless network detector, sniffer, and intrusion detection system.” | dragorn@kismetwireless.net  | <https://www.kismetwireless.net/>  |
|  | Software | **dchp\_probe**Linux based free and open-source DHCP monitoring tool.“dchp\_probe attempts to discover DHCP and BootP servers on a directly-attached Ethernet network. A network administrator can use this tool to locate unauthorized DHCP and BootP servers.“ Essential when testing DHCP servers. | Irwin Tillman | <https://www.net.princeton.edu/software/dhcp_probe/>  |
|  | Software | **VNC Viewer for Chrome** | RealVNC Limited | <http://chrome.google.com/webstore/detail/vnc%C2%AE-viewer-for-google-ch/iabmpiboiopbgfabjmgeedhcmjenhbla?hl=en>  |
|  | Software | **PuTTY**Free portable Windows SSH/Telnet client. | Simon Tatham | <http://www.chiark.greenend.org.uk/~sgtatham/putty>  |
| Security Software | Software | **AVG Free** | AVG Technologies | [http://free.avg.com](http://free.avg.com/)  |
|  | Software | **AVAST** | AVAST | [http://www.avast.com](http://www.avast.com/)  |
|  | Software | **ZoneAlarm**Free firewall software for Windows. | ZoneAlarm | <http://www.zonealarm.com/software/free-firewall/>  |
|  | Wikipedia† | **Firewall Distros**Starting point for finding free and open-source router and firewall distributions for use as virtual machines (and in GNS3) or on a physical network. |  | <https://en.wikipedia.org/wiki/List_of_router_and_firewall_distributions>  |
|  | Software | **Snort**Free and open-source cross-plaform network intrusion detection software. | Cisco | <https://www.snort.org/>  |
|  | Software | **Ettercap**Free open-source Linux software for man-in-the-middle attacks. Useful to demonstrate and model potential threats. | ettercap.project | <https://ettercap.github.io/ettercap/>  |
| Lab Tools | Software | **VirtualBox**Free and open-source virtualisation software. Create and test virtual network and client-server relationships. Store and run from a library of multiple operating systems and pre-installed appliances easily in the lab. Integrates with GNS3. | Oracle | <https://www.virtualbox.org/>  |
|  | Software | **VMware Player**Free proprietory virtualisation software. No longer advertised on the company site but still available in the downloads at this time. | VMware | <https://my.vmware.com/web/vmware/free#desktop_end_user_computing/vmware_player/6_0|PLAYER-607>  |
|  | Software | **Packet Tracer**A tool for describing, modelling and testing, network scenarios. Invaluable for demonstrating the movement of packets through the network. Proprietory software but still worth a mention as it may be available to you as part of a centre's involvement with Cisco Academy.  | Cisco | <http://www.cisco.com/web/learning/netacad/course_catalog/PacketTracer.html>  |
|  |  | **GNS3**Free cross-platform open-source PC lab software to design and test virtual network scenarios of routers, switches, hubs, clients and servers, using virtual machines which can also be linked to the host network. Uses a combination of diagram drawing, simple virtual PCs, VirtualBox or QEMU virtual machines and dynamips virtual routers and WireShark tracing. It is the best free alternative to Packet Tracer – with added functionality. It is, however, far from plug-and-play and requires a significant investment in learning and setup before pre-prepared scenarios can be introduced to the classroom. (Generally requires proprietory Cisco IOS images for routers which may or may not be available to you but opensource virtual routers such as M0n0wall can also be used.) | GNS3 | <http://www.gns3.com/>  |
|  |  | **iTALC**Free open-source PC lab management software for classroom monitoring and support using VNC (currently requires a VNC server running without password protection in Windows 7) – as well as a useful client-server example. | iTALC | <http://italc.sourceforge.net/>  |
| Lightweight OSs & (GNS3) VMs | Software | **Damn Small Linux**Designed small for bootable CDs and USBs and useful as small footprint virtual machines. | DSL contributors | <http://www.damnsmalllinux.org/>  |
|  | Software | **SliTaz**“is a secure and high performance operating system using the Linux Kernel and GNU software.” | SliTaz | <http://www.slitaz.org/>  |
|  | Software | **BunsenLabs**“BunsenLabs Linux is a distribution offering a light-weight and easily customizable Openbox desktop. “ | The BunsenLabs Linux Project | <https://www.bunsenlabs.org/>  |
|  | Software | **TinyCore**“It is not a complete desktop nor is all hardware completely supported. It represents only the core needed to boot into a very minimal X desktop typically with wired internet access.” Especially useful as small footprint virtual machines. | Team Tiny Core | <http://www.tinycorelinux.net/>  |
| Virtual Routers/ Firewalls | Software | **M0n0wall**“m0n0wall is a project aimed at creating a complete, embedded firewall software package that, when used together with an embedded PC, provides all the important features of commercial firewall boxes (including ease of use) at a fraction of the price (free software).” (Project is no longer in development.) | Manuel Kasper | <http://m0n0.ch/wall/index.php>  |
|  | Software | **OPNsense**Open source firewall (recommend successor to the M0n0wall project). | Deciso B.V. | <https://opnsense.org/>  |
|  | Software | **pfsense**“free Open Source FreeBSD based firewall, router, unified threat management, load balancing, multi WAN, Linux” | Electric Sheep Fencing LLC. | <https://www.pfsense.org/>  |
|  | Software | **Zeroshell**Free and open source “Zeroshell is a Linux distribution for servers and embedded devices aimed at providing the main network services a LAN requires.” | Fulvio Ricciardi | <http://www.zeroshell.org/>  |
|  | Software | **Smoothwall**“a Free firewall that includes its own security-hardened GNU/Linux operating system and an easy-to-use web interface.” | Smoothwall | <http://www.smoothwall.org/>  |
|  | Software | **Tor Browser**Cross-platform, free and open-source. Demonstrate the use of the Tor Browser for privacy, Internet freedom, to evade firewall and proxy restrictions, and access to the deep web at .onion.  | The Tor Project | [https://www.torproject.org](https://www.torproject.org/)  |
| Server Software | Software | **Ubuntu**The popular free open-source Linux: desktop/server editions. Create virtual machines, bootable DVD/USB. | Canonical | [http://ubuntu.com](http://ubuntu.com/)  |
|  | Software | **Microsoft Windows Server 2012**Free evaluation download (180 days). | Microsoft | <https://www.microsoft.com/en-us/evalcenter/evaluate-windows-server-2012>  |
|  | Software | **WAMP**Windows alternative to the LAMP stack. | Romain Bourdon | <http://www.wampserver.com/en/>  |
|  | Software | **FileZilla**Free open-source FTP server for Windows. | Mozilla Foundation | [http://filezilla-project.org](http://filezilla-project.org/)  |
|  | Software | **Free SSHd**For Windows (albeit makes less sense than an SSH server in Linux). | Kresimir Petric | [http://www.freesshd.com](http://www.freesshd.com/)  |
|  |  | **Teamviewer**Free for private use; remote access to a GUI server/OS. | TeamViewer | [http://www.teamviewer.com](http://www.teamviewer.com/)  |
|  |  | **VNC**Virtual Network Computing | RealVNC Limited | [http://www.realvnc.com](http://www.realvnc.com/)  |
| DNS Servers | Service | **OpenDNS**Free alternative DNS service with optional parental controls. | Cisco | <https://www.opendns.com/>  |
|  | Service | **Google Public DNS**Free alternative DNS. | Google | <https://developers.google.com/speed/public-dns/>  |
| Administration Software | Software | **Webmin**Web interface remote and local administration tool for Linux. | Webmin | <http://www.webmin.com/>  |
| News & Media | Website | **Slashdot**"News for Nerds. Stuff that Matters" | DHI Group, Inc. | <http://slashdot.org/>  |
|  | Website | **BBC Technology News** | BBC | <http://www.bbc.com/news/technology>  |
|  | Website | **The Guardian Technology News** | The Guardian | <http://www.theguardian.com/uk/technology>  |
| Further Resources |  | See also the Networking Essentials 5N2929 resource list. Many of the topics broadly overlap or may otherwise provide useful tools for teacher preparation and course delivery. |  |  |

†While *Wikipedia* is crowd-sourced and thus not an intrinsically reliable academic reference, it has proved to be a very useful starting point for exploring technical information and context in networking and IT generally.

‡ May not be currently available on TV, online, or as DVD; but might be worth keeping an eye out for or searching for online.

 **Useful Organisations:**

|  |  |
| --- | --- |
| **Name** | **Contact Information** |
| ICANN | <https://www.icann.org/>  |
| IANA | <http://www.iana.org/> |
| HEAnet | <http://www.heanet.ie/>  |
| Internet Service Providers' Association of Ireland | <http://www.ispai.ie/>  |
| Commission for Communications Regulation | <http://www.comreg.ie/>  |
| Irish Internet Association | <http://www.iia.ie/>  |
| National IT Teachers Association (NITTA) | <https://sites.google.com/a/cfedundrum.com/nitta-brown-bag-sessions-beta/> |

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| --- |
| **MOOCs (Massive Online Open Courses)** |
| Free access to online coursesSearch regularly for new courses and new start dates | https://www.mooc-list.com/ |