

my links

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1 National Science labs

1	http://www.mcs.anl.gov/	UChicago Argonne LLC	
2	http://www.nist.gov/	NIST	

2 Forums and technical discussion

1	https://tex.stackexchange.com/	Tex forum at Stack Exchange	
2	https://stackoverflow.com/questions/tagged/sympy	Sympy forum at stackexchange	

3	http://dsp.stackexchange.com/	DSP forum at stackexchange	
4	http://stackoverflow.com/questions/tagged/signal-processing	signal processing at stack overflow	
5	https://hsm.stackexchange.com/	History of Science and Mathematics forum at stackexchange	
6	http://robotics.stackexchange.com/	Stack exchange Robotics forum	
7	https://math.stackexchange.com/	Math forum Stack Exchange	
8	https://physics.stackexchange.com/	Physics form at Stack Exchange	
9	http://mathoverflow.net/	Mathoverflow	
10	http://imechanica.org	imechanica forum, solid and computational mechanics	
11	http://stackoverflow.com/questions/tagged/signal-processing	Signal processing at stackoverflow	
12	http://stackoverflow.com/questions/tagged/ruby	Ruby at stackoverflow	
13	http://physics.stackexchange.com/	Physics at stackexchange	
14	http://scicomp.stackexchange.com/	computational forum at stackexchange	
15	http://engineering.stackexchange.com/	Engineering forum at stackexchange	
16	http://www.eng-tips.com/	Engineering forum	
17	https://groups.google.com/forum/#!forum/comp.dsp	comp.dsp (signal processing)	
18	http://stackoverflow.com/questions/tagged/julia-lang	Julia forum at stackexchange	
19	https://www.biostars.org/	Forum for bioinformatics	

2.1 Mathematica forums

1	https://www.wolfram.com/mathematica/	Mathematica community board at WRI	
2	http://stackoverflow.com/questions/tagged/mathematica	Stackoverflow old forum for mathematica questions	
3	http://mathematica.stackexchange.com/	Mathematica at stack exchange	
4	http://mathematica.blogoverflow.com/	Stackexchange Mathematica blog	
5	http://chat.stackexchange.com/rooms/2234/wolfram-mathematica	Stackexchange Mathematica chat	
6	http://forums.wolfram.com/mathgroup/archive/	Usenet Mathematica group, closed now. This is the archive at WRI	
7	https://groups.google.com/forum/#!forum/comp.soft-sys.math.mathematica	Usenet Mathematica group, closed now. This is the archive at google groups	

2.2 Maple forums

1	http://www.mapleprimes.com/	Maple prime, ask Maple questions, Maple forum	
2	http://stackoverflow.com/questions/tagged/maple	Maple at stackexchange	
3	https://groups.google.com/forum/#!forum/comp.soft-sys.math.maple	Usenet Maple. Pretty much dead now	
4	http://lists.adeptsience.co.uk/mug/	Maple old MUG archives	11/25/07
5	https://groups.yahoo.com/neo/groups/maple-assist/info	Old Yahoo group Maple forum, no longer active but messages still there	added 8/10/2019

3 Signal and image processing, mpeg, DVD, HDTV, digital video

1	http://home.etf.rs/~tosic/afdhome.htm	Site for book Filter Design for Signal Processing using MATLAB and Mathematica. Contain source code that comes with the book.	3/10/15
2	http://nbviewer.ipython.org/github/zhemao/digital_filters/blob/master/Digital%20Filters.ipynb	Implementing Digital Filters in Julia. Audio demo showing effect of low pass and high pass on sound.	3/10/15
3	http://jackschaedler.github.io/circles-sines-signals/	has tutorial on sampling theory with animations made using Javascript using the 3D library	3/14/15
4	http://www.pdx.edu/ece/signal-processing	Portland state univ. Have good courses in signal processing	
5	http://spie.org/x34301.xml	small article on "Spatial Frequency Excerpt from Modulation Transfer Function in Optical and Electro-Optical Systems" discussion of spatial frequency, compare to temporal	
6	http://people.rit.edu/maheee/	Dr. Mark A. Hopkins site, rit.edu, has Matlab GUI for pole/zero based filter design called PZgui, similar to one I did in Mathematica as CDF.	

7	http://docs.scipy.org/doc/scipy/reference/generated/scipy.signal.remez.html	documentation of remez function in python with links to 2 important DSP papers <ol style="list-style-type: none"> 1. J. H. McClellan and T. W. Parks, "A unified approach to the design of optimum FIR linear phase digital filters", IEEE Trans. Circuit Theory, vol. CT-20, pp. 697-701, 1973. 2. J. H. McClellan, T. W. Parks and L. R. Rabiner, "A Computer Program for Designing Optimum FIR Linear Phase Digital Filters", IEEE Trans. Audio Electroacoust., vol. AU-21, pp. 506-525, 1973. 	
8	http://cnx.org/contents/0eaa1728-2824-4aed-b7b2-75981117e57a@2/Chebyshev_Filter_Properties	good notes on chebyshev filter design	
9	http://www.silcom.com/~aludwig/	Art Ludwig's Sound Page, has good notes on DSP and audio filtering, FFT, bin width, etc.. matlab plots.	
10	http://lpsa.swarthmore.edu/ZXform/InvZXform/InvZXform.html	Z transform examples, inverse Z transform	
11	http://www.iowegian.com/scopefir	commercial program, ScopeFIR: FIR Filter Design Software for Windows. Looks really nice. May be will try it one day.	
12	https://ccrma.stanford.edu/~jos/pasp/Theory_Ideal_Bandlimited_Interpolation.html	describes sinc interpolation, stanford.edu notes	
13	http://www.eurasip.org/	The European Association for Signal Processing (EURASIP) was founded on 1 September 1978	
14	http://redcedar.com/learndsp.htm	How Do I Learn DSP? page by Dale Grover. Contains very high level descriptions of dsp and of filters difference.	
15	http://www.upscale.utoronto.ca/PVB/Harrison/FourierTransform.pdf	PDF file, on Fourier transform, from utoronto by David Harrison. Another PDF file is on Digital filters uses Mathematica	12/25/09
16	https://ee.sjsu.edu/content/course-syllabi-for-graduates	EE courses at San Jose State Univ. California, many on DSP	
17	http://www.stanford.edu/class/ee379c/	Advanced digital communications course at Stanford univ. spring quarter 2007	12/24/09
18	http://www.cmlab.csie.ntu.edu.tw/cml/dsp/training/coding/transform/fft.html	Fast Fourier Transform (FFT) notes, notes on decimation in time	9/24/08

19	http://complextoreal.com/tutorials	Tutorials on Digital Communications Engineering, good notes on modulation and basic digital communications	11/25/08
20	http://www.ece.ucsb.edu/courses/ECE146/146B_S08Gibson/default.html	Digital Communication Theory and Techniques course, ECE 146B Spring 2008, Instructor: Prof. Jerry D. Gibson, University of California, Santa Barbara. Second sequence of digital communication course.	11/28/08
21	http://www.ece.ucsb.edu/academics/courses/	Courses offered in ECE at UC Santa Barbara by quarter, future courses.	
22	http://www.digitalsignallabs.com/	Randy Yates's Digital signals lab. Has good papers section that explains important concepts in simple to understand way, with links to many other signal processing sites.	
23	http://www.dspguru.com/	"dspGuru provides a wide variety of DSP information to help you master the complex domain of Digital Signal Processing" Has more links to other signal processing sites. Has trial versions of DSP software for design of IIR, FIR and others here	
24	https://www.ece.illinois.edu/academics/courses/profile/ECE459	ECE459 communication systems 1, ECE dept, UNIVERSITY OF ILLINOIS UIUC)	july 7 2009
25	http://cnx.org/content/m13243	Interactive Signal Processing Laboratory Simulations at CNX, needs to install labview plugin to use	july 7 2009
26	http://cnx.org/content/m18652/latest	CNX site, good basic definitions for DSP terms used in digital communications, PAM Transmitter and Receiver Implementing Coherent Detection	12/16/09
27	http://legacy.mos.org/sln/sem/intro.html	lots of cool scanning electron microscope images	
28	http://ptolemy.eecs.berkeley.edu/eecs20/index.html	EECS20N: Signals and Systems , UC Berkeley Textbook: Structure and Interpretation of Signals and Systems, by E. A. Lee and P. Varaiya, 2011 plugin to use	
29	http://web.ece.ucdavis.edu/~bbaas/281/	EEC 281 - VLSI Digital Signal Processing, UC Davis, has classical papers (historical notes on DSP by Cooley) and other notes. Grad course on VLSI DSP	july 4 2012
30	http://www.gaussianwaves.com/	Large site that contains lecture videos and links on many books. I am not sure how it works, but it seems useful to browse. Just found about it.	3/20/15
31	http://www.exstrom.com/journal/sigproc/	site for book Recursive Digital Filters: A Concise Guide by Hollos. Has Free C code for digital filter design.	3/21/15

32	http://ocw.mit.edu/courses/find-by-topic/#cat=engineering&subcat=electricalengineering&spec=signalprocessing	Signal processing courses at MIT open course	3/21/15
33	http://www.dspguide.com/	Web site of the book "The Scientist and Engineer's Guide to Digital Signal Processing" By Steven W. Smith. Allows browsing and also free download. Has links to other DSP sites also.	3/23/15
34	https://class.coursera.org/audio-001/lecture/preview	on line video lectures for course "Audio Signal Processing for Music Applications" by Prof Xavier Serra, Prof Julius O Smith, III at coursera.org	
35	https://www.freesound.org/	Free sound to download to use for audio DSP	
36	http://docs.scipy.org/doc/scipy/reference/signal.html	Python signal processing functions	
37	http://www.embeddedrelated.com/	EmbeddedRelated.com site. Here is an article on the above site, comparing Matlab to Python for DSP here	
38	http://stackoverflow.com/questions/23690766/proper-way-to-add-noise-to-signal	question and answer about adding noise to signal in Matlab	
39	http://www-users.cs.york.ac.uk/~fisher/lcfilter/	York univ. UK. Filter design on-line using LC. "This is an interactive design package for designing analogue (i.e. hardware) filters made of inductors and capacitors (Ls and Cs). " software is here	
40	http://www.dsprelated.com/	dsprelated.com, lots of useful articles by Rick Lyons and others. Has links to on-line DSP books here	
41	http://www.dspguide.com/pdfbook.htm	Rick Lyon book on his site in PDF format	8/18/2015
42	https://sestevenson.wordpress.com/	Blog on DSP tutorials. Has FIR in c here	
43	http://musicdsp.org/	"Musicdsp.org is a collection of data, gathered for the music dsp community."	
44	http://jean-pierre.moreau.pagesperso-orange.fr/f_signal.html	SIGNAL PROCESSING IN FORTRAN, J-P Moreau site.	
45	http://www.abvolt.com/compdsp/index.htm	comp.dsp 2010 Conference	july 15,2015

46	https://iowegian.com/scopedsp/index.htm	scope DSP, an FFT Spectral Analysis Software by Iowegian International. Not free, but looks good, "can generate, read, write, window, and plot sampled-data signals. It features an Arbitrary-N FFT algorithm to quickly perform Time-Frequency conversions, and it calculates many statistics in Time and Frequency"	July 2015
47	http://sound.eti.pg.gda.pl/musicrecog	Multimedia Systems Department, Gdansk University of Technology, contain mathematica notebooks for music signal processing	Jan 18, 2013
48	http://www.cs.washington.edu/research/metip/tutor/tutor.Filtering.html	Page of Clifford Watson, Department of Applied Mathematics, University of Washington, has good notes on linear filtering of images in spatial domain	
49	http://www.ee.washington.edu/research/sivp_group.html	Speech, Image and Video Processing Group at Univ. Washington, Seattle, has list of course in the subject there	
50	http://www.atsc.org/	The Advanced Television Systems Committee, Inc., is an international, non-profit organization developing voluntary standards for digital television.	
51	http://www.itu.int/en/Pages/default.aspx	ITU is the United Nations specialized agency for information and communication technologies – ICTs. We allocate global radio spectrum and satellite orbits, develop the technical standards that ensure networks and technologies seamlessly interconnect	
52	http://www.4front-tech.com/pguide/audio2.html	This chapter could be called "Advanced audio programming". Has good notes on Audio processing, some C coding	
53	http://www.linuxvideo.org/	Linux video group. A group writing DVD for linux and other stuff.	
54	http://www.dolby.com/	Dolby home page. They make good Audio stuff	
55	http://www.iec.ch/	IEC, International Standards and Conformity Assessment for all electrical, electronic and related technologies	
56	http://dsp.stackexchange.com/questions/2096/why-so-many-methods-of-computing-psd	question and answers on different methods for PSD calculation, summary of all methods used	
57	http://web.stanford.edu/class/ee398a/	EE398A - Image and Video Compression, Course by Prof. Bernd Girod, contains many useful tutorials online for image processing, compression, MPEG. Uses Matlab	7/16/16

58	http://dspprojects.blogspot.com/	Site that contains lots of DSP projects, by Veriolg	
59	http://live.ece.utexas.edu/	"Welcome to the Laboratory for Image and Video Engineering (LIVE) at The University of Texas at Austin. LIVE is directed by Prof. Alan C. Bovik"	
60	http://www.redcedar.com/learn dsp.htm	General blog page on "How Do I Learn DSP?" by Dale Grover, dated 2002 has simple description of difference between FIR and IIR filters	

3.1 Audio signal processing

1	https://ccrma.stanford.edu/~jos/filters/filters.html	online good course material on digital filters with audio applications by JULIUS O. SMITH III Center for Computer Research in Music and Acoustics (CCRMA), Stanford Univ.	
2	https://ccrma.stanford.edu/course-overviews/music-421a	Stanford Music 421A Course Title: Audio Applications of the Fast Fourier Transform (FFT) Instructor: Julius Orion Smith III	
3	https://ccrma.stanford.edu/courses/424/	Stanford, "MUSIC 424/EE 367D. Signal Processing Techniques for Digital Audio Effects – Digital signal processing methods for audio effects used in music mixing and mastering" uses Matlab or C	
4	http://online.stanford.edu/course/audio-signal-processing-music-applications	AUDIO SIGNAL PROCESSING FOR MUSIC APPLICATIONS, a Stanford online course	
5	http://cswb.cs.wfu.edu/~burg/CCLI/Templates/home.php	"National Science Foundation CCLI Grant Linking Science, Art, and Practice Through Digital Sound"	
6	http://labrosa.ee.columbia.edu/matlab/	Dan Ellis Matlab Audio Processing Examples	
7	https://www.coursera.org/learn/audio-signal-processing	"In this course you will learn about audio signal processing methodologies that are specific for music and of use in real applications. We focus on the spectral processing techniques of relevance for the description and transformation of sounds" uses Python	

8	https://ccrma.stanford.edu/software/stk/	By Perry R. Cook and Gary P. Scavone, Stanford Univ. "The Synthesis ToolKit in C++ (STK) is a set of open source audio signal processing and algorithmic synthesis classes written in the C++ programming language. STK was designed to facilitate rapid development of music synthesis and audio processing software, with an emphasis on cross-platform functionality, realtime control, ease of use, and educational example code"	12/18/2016
9	http://www.musicdsp.com/	"Musicdsp.org is a collection of data, gathered for the music dsp community" has links to source code repositories	12/18/2016

3.2 MRI related

1	http://mathworld.wolfram.com/RadonTransform.html	Mathworld page on radon transform	
2	http://engineering.dartmouth.edu/courses/engs167/12%20Image%20reconstruction.pdf	PDF on MRI and Radon, looks good. contains backprojection using algebra, by finding solution to matrix equation	
3	http://www.comap.com/product/samples/UMM794.pdf	good document on mathematics of radon	
4	http://visielab.ua.ac.be/staff/sijbers/snr_ref.html	web page of references on SNR in MRI	
5	http://www.impactscan.org/slides/eam2002/sld001.htm	Notes on Filtered backprojection and CT	
6	http://www.eecs.umich.edu/~fessler/	Dr John Fessler web page UMICH. Does MRI research and this page contains software and papers. recommended books on MRI and on medical imaging MRI data from Fessler's group is here	
7	http://www.nap.edu/readingroom/books/biomedical/	on-line medical imaging book Mathematics and Physics of Emerging Biomedical Imaging	
8	http://www-cellbio.med.unc.edu/henson_mrm/	MRI data sets to practice on	July 2015
9	http://ehealthmd.com/content/what-magnetic-resonance-imaging-mri?PageSpeed=noscript		July 2015
10	http://www.fonar.com/glossary.htm	MRI GLOSSARY	
11	http://www.dimag.com/cardiovascular/journal/showArticle.jhtml?articleID=201202400	good discussion on sampling for imaging, UBM Medica, LLC	

12	http://www.nitrc.org/projects/pediatric_mri/	MRI data from NITRC	
13	http://mipav.cit.nih.gov/clickwrap.php	MIPAV for MRI application from NIH.	

4 Graphics, GUI related, OpenGL, Qt

4.1 General graphics

1	http://graphics.stanford.edu	Stanford computer graphics laboratory	
2	http://www.siggraph.org/	SIGGRAPH home page	
3	http://www.sgi.com/partners/developers/?/index.html	Silicon graphics developers page.	
4	http://www.flipcode.com/	During its nearly seven years of operation, the site was a popular resource and community hub based primarily around 3d graphics and game programming.	
5	https://en.wikibooks.org/wiki/Robotics/Design_Basics/Design_software	Wiki page, has list of some CAD software	Nov 2017
6	https://www.moorepants.info/jkm/courses/eng4/inkscape-tutorial.html	How to use inkspace to make free body diagram and dimensions	Nov 2017
7	http://wiki.inkscape.org/wiki/index.php/Galleries	Inksape gallery	Nov 2017

4.2 Tools for making animations for my physics simulations, web movies

1	http://www.cockos.com/licecap/	"LICEcap can capture an area of your desktop and save it directly to .GIF", I used this on windows, it is easy to use	
2	http://gifsoup.com/index.php	Web site to convert movies to animated gif files. Try it for my physics Mathematica demos to see if it works. But it looks like it only works with youtube movies. Have not tried it yet.	
3	http://camstudio.org/	Free windows movie making tool from screen, used to capture Manipulate as it runs and convert to movies	
4	http://www.videolan.org/vlc/index.html	VLC media player, used it to convert avi generated by camstudio capture to to web movie formats (mp4, ogg, webml, etc...)	

4.3 OpenGL, The new Vulkan (new OpenGL API)

1	https://www.opengl.org/	Main site for OpenGL. And OpenGL registry	
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2	http://en.wikipedia.org/wiki/Vulkan_(API)	Wikipedia entry on Vulkan	
3	https://www.khronos.org/vulkan/	khronos.org, Vulkan main site	
4	http://www.opengl-tutorial.org/	OpenGL tutorials (using 3.3) by Damien Mabin	
5	http://duriansoftware.com/joe/An-intro-to-modern-OpenGL.-Table-of-Contents.html	OpenGL tutorials (using 3.0) by Joe Groff	
6	http://www.mbsoftworks.sk/index.php?page=tutorials&series=1	Newer OpenGL tutorials (using 3.3) by mbsoftworks	
7	http://graphics.cs.wisc.edu/WP/cs559-sp2015/	CS559 Computer Graphics - Spring 2015, University Wisconsin, Madison, uses OpenGL, has examples, also uses FLTK	
8	http://www.ibm.com/developerworks/linux/library/l-datavistools/	IBM site, list of data visualization tools on linux	
9	http://www.thefreecountry.com/sourcecode/gui.shtml	Site that shows free GUI libraries	
10	http://web.eecs.umich.edu/~sugih/courses/eecs487/glut-howto/	note on Building OpenGL/GLUT Programs, umich.edu, has simple example and make file for building OPEN GL with C++	2015
11	http://www.web3d.org/	web 3D consortium	
12	http://www.mesa3d.org/	The Mesa 3D Graphics Library	

4.4 Qt GUI

1	http://qmlbook.github.io/	online book on Qt5	1/20/16
2	http://qt-apps.org/	Examples of Qt applications to look at and try	
3	http://doc.qt.io/qt-5/gettingstarted.html	download page	
4	http://wiki.qt.io/Deploy_an_Application_on_Windows	depoloy application on windows	
5	http://qwt.sourceforge.net/	Qwt "The Qwt library contains GUI Components and utility classes which are primarily useful for programs with a technical background. Beside a framework for 2D plots it provides scales, sliders, dials, compasses, thermometers, wheels and knobs to control or display values, arrays, or ranges of type double."	

6	http://www.qcustomplot.com/	QCustomplot "QCustomPlot is a Qt C++ widget for plotting and data visualization. It has no further dependencies and is well documented. This plotting library focuses on making good looking, publication quality 2D plots, graphs and charts, as well as offering high performance for realtime visualization applications"	
7	https://wiki.qt.io/Building_a_static_Qt_for_Windows_using_MinGW	Notes on building static linked Qt application. See this also on same subject. And Also	

5 Engineering mechanics, structural dynamics, Civil engineering

5.1 structural

1	http://www.structuremag.org/	structure magazine site	
2	http://en.wikiversity.org/wiki/Category:Elasticity	Wikipedia on elasticity	
3	http://frame3dd.sourceforge.net/	Frame3DD. Static and Dynamic Structural Analysis of 2D and 3D Frames. by Henri P. Gavin, Ph.D., P.E., Associate Professor Duke University "Frame3DD is free open-source software for static and dynamic structural analysis of 2D and 3D frames and trusses with elastic and geometric stiffness"	
4	http://web.mst.edu/~mecmovie/	Mechanical/solid mechanics movies online. From Mechanics of Materials, An Integrated Learning System by Timothy A. Philpot	
5	http://frame3dd.sourceforge.net/	Frame3DD. Static and Dynamic Structural Analysis of 2D and 3D Frames. Department of Civil and Environmental Engineering Edmund T. Pratt School of Engineering open source/free download	
6	http://en.wikipedia.org/wiki/STAAD	STAAD, structural analysis. user guide is here but could not find student version. It seems to be commercial only product.	
7	http://www.engineeringwiki.org/wiki/Structural_Analysis	Engineering Wiki, has section on structural analysis	
8	http://www.asce.org/structural-engineering/structural-engineering/	Structural engineering section of ASCE	
9	http://bendingmomentdiagram.com/free-calculator/	online free program to draw bending moment and shear force diagrams	
10	http://skyciv.com/free-truss-calculator/	free online truss calculator	

11	http://skyciv.com/free-frame-calculator/	free online frame calculator	
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5.2 others

1	http://ocw.mit.edu/courses/civil-and-environmental-engineering/1-050-solid-mechanics-fall-2004/	MIT open course, Solid Mechanics, MIT Course Number 1.050 As Taught In Fall 2004	
2	http://www.stru.polimi.it/people/boffi/sd_2012.html	This courses contains slides and PDF notes on structural dynamics.	2/8/13
3	http://www.acs.psu.edu/drussell/Demos.html	acoustics and vibrations animations. Penn state acoustics by Dan Russell	
4	http://www2.mae.ufl.edu/haftka/struct_dyn/	EML 5223 Structural Dynamics Spring 2006, uses Meirovitch, L., Fundamentals of Vibrations textbook. Has solutions of HWs there	2/9/13
5	https://www.youtube.com/watch?feature=player_embedded&v=YVG0UYJ63Zk#!	Lecture video, Structural Dynamics by Dr. P. Banerji, Department of Civil Engineering, IIT Bombay. Mod-01 Lec-18 Generalized Single Degree of Freedom Systems Equations of Motions	
6	http://www.pmi.ou.edu/Biot2005/biotConferenceBiotPapers.htm	Maurice A. Biot collection of papers on finite elements and engineering mechanics	July 5, 2012
7	http://faculty.washington.edu/eberhard/CEE%20379/CEE%20379%20home.htm	Introduction to Structural Engineering, CEE 379, Washington.edu	9/29/11
8	http://solidmechanics.org/FEA.htm	on-line book. contains Maple and Matlab code for basic structural engineering and FEM code. Tried few, Very nice demos.	3/16/2010
9	http://worldofmz.blogspot.com/search/label/Mechanical	WORLD OF MZ (FREE VIDEO LECTURES), has videos on mechanics, Finite elements, lectures.	
10	http://www.sap2000.org/isap/index.htm	SAP2000, commercial finite elements and structural analysis program. Used it for my structural dynamics course at UW.	July 17, 2013
11	http://www.msm.cam.ac.uk/phase-trans/teaching.html#MP7	Course MP7, Finite element analysis, Cambridge Univ. UK, slides and video.	3/5/2010
12	http://sites.nationalacademies.org/pga/biso/IUTAM/	International Union of Theoretical and Applied Mechanics (IUTAM)	
13	http://www.ce.berkeley.edu/~sanjay/	Sanjay Govindjee page, UC Berkeley Structural Engineering, Mechanics, and Materials, has link to Feap, A Finite Element Analysis Program written by Prof. R.L. Taylor for the solution of static and dynamic linear and nonlinear problems.	

14	http://www.mitcalc.com/EN/pr_buckling.htm	Slender strut (column) buckling program. Commerical.	
15	http://mechanical.illinois.edu/courses	UIUC Offers MSc. in theoretical and applied mechanics	
16	http://www.asce.org/	American Society of Civil Engineers	
17	https://www.ice.org.uk/	UK Institution of Civil Engineers	

5.3 Journals on Mechanics, finite elements, computational mechanics

1	http://www.journals.elsevier.com/computer-methods-in-applied-mechanics-and-engineering/	Computer Methods in Applied Mechanics and Engineering, Elsevier	
2	http://www.journals.elsevier.com/finite-elements-in-analysis-and-design/	Finite Elements in Analysis and Design An International Journal for Innovations in Computational Methodology and Application, Elsevier. "The aim of this journal is to provide ideas and information involving the use of the finite element method and its variants, both in scientific inquiry and in professional practice."	
3	http://www.rame.org.in/p/international-journal-of-analytical.html	International Journal of Analytical, Experimental & Finite Element Analysis (IAEFEA) (e-ISSN 2394-5141 & p-ISSN 2394-5133) is quarterly published online International Journal.	
4	http://www.rame.org.in/p/international-journal-of-computational.html	International Journal of Computational and Electronics Aspects In Engineering (IJCEAE)	
5	http://www.iutam.net/	The International Union of Theoretical and Applied Mechanics site	

5.4 Ansys and Ansys APDL

1	http://www.ansys.com	Ansys main page	
2	http://www.ansys.com/Products/Academic/ANSYS-Student	ANSYS Student web page	
3	http://orange.engr.ucdavis.edu/Documentation12.0/120/ans_prog.pdf	Ansys programmer manual in PDF, at UC Davis. release 12	
4	http://www.mece.ualberta.ca/tutorials/ansys/BT/BT.html	Basic tutorials. Give example how to use ansys to solve structural problems	Nov 3, 2017
5	http://www.mece.ualberta.ca/tutorials/ansys/IT/Density/Density.html	Shows how to add weight and gravity in Ansys for beam	Nov 3, 2017

6	http://www.mece.ualberta.ca/tutorials/ansys/AT/APDL/APDL.html	From Univ. Alberta: "This tutorial was completed using ANSYS 7.0 The purpose of this tutorial is to familiarize the user with the ANSYS Parametric Design Language (APDL). This will be a very basic introduction to APDL"	
7	http://www.mece.ualberta.ca/tutorials/ansys/AU/Printing/Printing.html	Printing and Plotting ANSYS Results to a File. Shows how to send graphics output directly to file in vector graphics format. Basically do 'Utility menu bar'/'PlotCtrls'/'Redirect Plots'/'To File...' and when done do 'Utility menu bar'/'PlotCtrls'/'Redirect Plots'/'To Screen'	
8	http://www.ansys.com/Industries/Academic/Tools/Curriculum+Resources/Tutorials,+Examples+\&+Curriculum	Ansys tutorial links. Tried this	
9	http://www.ansys.stuba.sk/html/c-index.htm	ANSYS Commands Manual Topic Index, can search commands using index	
10	https://confluence.cornell.edu/display/SIMULATION/ANSYS+Learning+Modules	At Cornell Univ. "List of Learning Modules Each learning module below contains a step-by-step tutorial that shows details of how to solve a selected problem using ANSYS, a popular tool for finite-element analysis (FEA). The tutorial topics are drawn from Cornell University courses" But it seems to use the Workbench and not APDL	May 2016
11	http://www.padtinc.com/blog/the-focus/20-apdl-commands-every-ansys-mechanical-user-should-know	20 APDL Commands Every ANSYS Mechanical User Should Know, by Eric Miller	
12	http://www.padtinc.com/blog/the-focus/making-pretty-plots-in-ansys-mechanical-and-mechanical-apdl	blog page by Eric Miller on handling images and printing them from ANSYS APDL	
13	http://engr.bd.psu.edu/davej/classes/commands.html	Has short list of ANSYS commands. Useful	
14	https://www.sharcnet.ca/Software/Ansys/16.2.3/en-us/help/ans_cmd/Hlp_C_CmdTOC.html	APDL commands reference	Nov 4, 2017
15	http://engr.bd.psu.edu/davej/classes/commands.html	frequenc used APDSL commands	Nov 4, 2017
16	https://www.cfd-online.com/Forums/ansys/	Ansys forum to ask questions	Nov 5, 2017
17	http://www.padtinc.com/blog/the-focus/making-pretty-plots-in-ansys-mechanical-and-mechanical-apdl	hints on making good quality plots in ansys	Nov 7, 2017

6 Robotics, Dynamics and Control

1	http://www.cds.caltech.edu/~murray/amwiki/index.php/Main_Page	"Welcome to FBSwiki. This is the wiki for the Second Edition of text Feedback Systems by Karl J. Åström and Richard M. Murray."	
2	https://scholar.google.com/citations?user=9R4r19gAAAAJ&hl=en	Professor Barmish publications page at google scholar. Control theory papers, Control of uncertain systems.	Oct 2015
3	http://planning.cs.uiuc.edu/	Lavalle's Robot planning algorithms book online.	
4	http://en.wikipedia.org/wiki/Linear-quadratic_regulator	Linear-quadratic regulator (LQR) in wikipedia	
5	http://en.wikipedia.org/wiki/Category:Optimal_control	Optimal control in wikipedia	
6	http://12000.org/my_notes/schools_ranking/index.htm	List of schools in US that offer degrees in dynamics and control (not many I found).	
7	http://www.engr.iupui.edu/~skoskie/	Dr Koskie site, at Purdue. Has links to Control courses.	1/1/2015
8	http://www.dlr.de/rmc/rm/en	Robotics and Mechatronics Center (DLR)	1/1/2015
9	http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.88.8863&rep=rep1&type=pdf	Robot Dynamics: Equations and Algorithms paper by Roy Featherstone and David Orin	4/20/2010
10	http://www.cds.caltech.edu/~murray/mlswiki/index.php/Main_Page	A Mathematical Introduction to Robotic Manipulation, online book by Richard M. Murray, Zexiang Li and S. Shankar Sastry	1/1/2015
11	http://ctms.engin.umich.edu/CTMS/index.php?aux=Home	Control and Matlab simulink tutorials at CTMS of Univ. Michigan	
12	https://classes.soe.ucsc.edu/ams146/Spring05/Lectures.html	Lecture notes on nonlinear dynamics and chaos, Bifurcations. has Matlab code	
13	http://www.cds.caltech.edu/~murray/mlswiki/index.php?title=Robot_Dynamics_and_Control	Good review of Robot Dynamics and Control, from Cal tech CDS.	
14	https://www.youtube.com/watch?v=rA9tm0gTln8	You Tube showing animation of Denavit-Hartenberg Reference Frame Layout by TekkotsuRobotics	
15	http://www.pieter-jan.com/node/11	Pieter-Jan blog on what is called complementary filter, for getting position data from gyroscope.	
16	http://www.cs.cornell.edu/~djames/	Teaches course on computational motion at Cornell edu.	
17	http://courses.cornell.edu/preview_course_nopop.php?catoid=22&coid=367312	CS 5752 course, Robotic Manipulation Cornell edu.	
18	http://www.calpoly.edu/~fowen/me422/	ME 422, Introduction to Mechanical Control Systems — Winter 2015. cal poly, has good notes on control, ess, and system types/table here	

19	http://ece.gmu.edu/~gbeale/ece_421/ess_01.html	has Good discussion on system type and steady state and how to determine based on input and system type	
20	https://www.youtube.com/watch?v=xp-IAxT7ovQ	You tube on aircraft control, basic review.	
21	http://robotics.engr.wisc.edu/cgi-bin/wikiwp/courses/	List of robotics and dynamics course at Univ Wisconsin Madison, Robotics and Intelligent Systems Lab	
22	http://mime.oregonstate.edu/robotics-core-coursework	List of robotics courses at Oregon State University, Corvallis, OR	
23	https://www.youtube.com/watch?v=LZ82iANWBLO	You tube Introduction to Vehicle Dynamics lecture by Dr.R.Krishnakumar, Department of Engineering Design, IIT Madras	11/1/2016
24	https://control.com/	Control and Automation. "Control Automation is a community of control engineers, automation specialists, and experts in the broader industrial field."	July 2020

6.1 Journals in Dynamics, Robotics and Control

1	http://link.springer.com/journal/10883	Journal of Dynamical and Control Systems, Springer	
2	http://www.springer.com/mathematics/journal/12591	Differential Equations and Dynamical Systems, Springer	
3	https://en.wikipedia.org/wiki/List_of_people_in_systems_and_control	Wiki entry for list of people in control	
4	http://arc.aiaa.org/loi/jgcd	Journal of Guidance, Control, and Dynamics, aiaa.org	
5	http://www.ijrr.org/	The International Journal of Robotics Research, SAGE Journals	
6	http://iaesjournal.com/online/index.php/IJRA	IAES International Journal of Robotics and Automation	
7	http://www3.nd.edu/~ieeetac/	Automatic Control, IEEE Transactions	
8	http://www.ieee-ras.org/publications/t-ro	Transactions on Robotics, IEEE Transactions	
9	http://www.springer.com/engineering/robotics/journal/10514	Autonomous Robots, Springer Journal	
10	http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=100	Robotics Automation Magazine, IEEE	
11	http://mechanismsrobotics.asmedigitalcollection.asme.org/journal.aspx	Journal of Mechanisms and Robotics, ASME	
12	http://www.ieee-asme-mechatronics.org/	IEEE/ASME Transactions on Mechatronics	
13	http://www.worldscientific.com/worldscinet/ijhr	International Journal of Humanoid Robotics, World Scientific	

14	https://www.info-key.de/en/asom	ASOM, commercial software for linkage drawing and analysis "Analysis, Synthesis und Optimization of Multi-bar linkages"	
15	https://community.asme.org/ded_multibody_systems_nonlinear_dynamics/default.aspx	"OFFICIAL ASME GROUP Multi-body Systems Nonlinear Dynamics The Technical Committee on Multi-body Systems and Nonlinear Dynamics (TC-MSND) promotes research, application, and education in experimental, symbolic, computational, and analytical activities"	
16	http://www.diva-portal.org	Place to search for papers. For example, typed "control computer algebra"	July 20, 2015
17	http://akademiska.nu/	Search through scientific publications from Swedish universities from Swepub database	
18	trends-in-control-theory	question at researchgate about trends in control theory	
19	http://www.ercim.eu/publication/Ercim_News/enw39/van_schuppen.html	Research in Control and System Theory by Jan H. van Schuppen, ercim.eu 1999	
20	http://www.ece.uah.edu/research/control/	Control Theory Research Group at The University of Alabama in Huntsville	
21	http://journals.cambridge.org/action/displayJournal?jid=ROB	Robotics, An Official Journal of the International Federation of Robotics	

6.2 Conferences in Dynamics, Robotics and Control

1	http://acc2015.a2c2.org/	American Control Conference (ACC) The 2015 American Control Conference will be held Wednesday through Friday, July 1-3 in downtown Chicago, Illinois	
2	http://icra2015.org/	IEEE International Conference on Robotics and Automation (ICRA), The 2015 conference will be held May 26-30, 2015 at the Washington State Convention Center in Seattle, Washington, USA	
3	http://www.msc2015.org/	IEEE Multi-Conference on Systems and Control (MSC),	
4	http://www.iros2015.org/	IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) The 2015 IEEE/RSJ International Conference on Intelligent Robots and Systems will take place in Hamburg, Germany, September 28 - October 02, 2015.	

5	http://www-control.eng.cam.ac.uk/gv/p6/	Paper 6: Linear Systems and Control , Univ. Of Cambridge, UK	
6	http://laris.fesb.hr/digitalno_vodjenje/download/history2.htm	History of feedback control	

6.3 Pendulum related, chaotic pendulum, damped driven pendulum

1	http://farside.ph.utexas.edu/teaching/329/lectures/node47.html	Useful for the chaotic pendulum. Used as reference for one of my demos.	
2	http://www.phy.davidson.edu/StuHome/chgreene/chaos/Pendulum/pendulum_content_frame.htm	shows chaos in pendulum. But uses normalized ODE and shows Poincare sections. See if I can reproduce this. Needs Java to run.	
3	http://www.aw-bc.com/ide/idefiles/media/JavaTools/pndpsctn.html	has nice java applet that shows Poincare sections for the Forced Damped Pendulum.	
4	http://brain.cc.kogakuin.ac.jp/~kanamaru/Chaos/e/Animation/pendulum.html	has animation of pendulum forced phase portrait.	
5	http://www.civilized.com/mlabexamples/Pendulum.html	A Numerical study of the Forced Damped Pendulum	
6	http://www.phy.davidson.edu/StuHome/chgreene/Chaos/Double%20Pendulum/phase_diagram.htm	Java applet for Phase Space for the double pendulum	
7	http://vigo.ime.unicamp.br/2p/DoublePendulum.html	Java applet for double pendulum systems	
8	http://www.math.ucsd.edu/~sbuss/ResearchWeb/ikmethods/iksurvey.pdf	paper on use of Jacobian for Robot arm and survey on Inverse Kinematics	1/14/15
9	http://www.mathworks.com/discovery/pid-control.html	Design and implement PID controllers, Matlab web page.	
10	http://butikov.faculty.ifmo.ru/index.html	Eugene Butikov personal page, has dynamics simulations, rigid body, spinning top. But they use Java applets, so can't run them these days. There is nice free PDF book on space dynamics also.	
11	https://scholar.google.com/	search scholar.google.com for robot dynamics	
12	https://www.grasp.upenn.edu/academics/masters	Masters degree in robotics at Penn engineering	
13	http://real.uwaterloo.ca/~mbody/	Multibody System Dynamics: Research Activities at Univ. Waterloo	July 5, 2015
14	http://mat21.etsii.upm.es/mbs/	web site for book Kinematic and Dynamic Simulation of Multibody Systems by Javier Garcia de Jalon and Eduardo Bayo	July 5, 2015
15	http://sbel.wisc.edu/Courses/ME440/2009/	ME440: Intermediate Vibrations, Year 2009 at SBEL web site, UW madison, by Prof. Dan Negrut. Has notes and ppt lectures.	

6.4 Drone specific links

1	https://www.dronezon.com/	Drone zone site, all about drones, good article here	May 2017
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6.5 youtube lectures on control

1	https://www.youtube.com/user/ControlLectures	by Brian Douglas	May 2018
2	https://www.youtube.com/channel/UCMBXZxd-j6Vqrynyk01dURw	by John Rossiter	May 2018
3	https://www.youtube.com/channel/UCm5mt-A4w611knZ9lCsZtBw	by Steve Brunton	May 2018
4	https://www.youtube.com/user/katkimshow	by katkimshow	
5	https://www.youtube.com/watch?v=Kr_wmPBUsyY	by Texas Instruments	May 2018

7 Physics

7.1 collection of PhD qualifying exam questions

1	http://www.niu.edu/physics/academic/grad/PhDexam/index.html	"This is an archive of NIU Physics PhD Candidacy Exams in pdf format, organized by subject area and date.	
2	http://jonathanwhitmore.com/physics/physics-quals	UCSD Physics PhD Qualifying Exams and Solutions	

7.2 General Physics

1	https://www.aip.org/	American Institute of Physics main page	Nov 2018
2	https://history.aip.org/history/exhibits/gap/index.html	American Institute of Physics page, contains PDF files of famous papers in physics to download	Nov 2018
3	http://research.microsoft.com/apps/tools/tuva/index.HTML	Feynman lectures at project Tuva at Microsoft	
4	http://dmoz.org/Science/Physics/Mathematical_Physics/	physics links	
5	http://www.geocities.com/ednitou/	open problems in physics and math. For research	
6	http://www.bqlearning.org/ospdb/ospSearch.php	site which lists physics simulation links in Java	
7	http://www.upscale.utoronto.ca/GeneralInterest/Classical.html	good page on classical physics. Many links and topics.	
8	http://dft.rutgers.edu/kieron/beta/	lecture on DFT (density functional theory)	
9	http://cosmology.berkeley.edu/Classes/F2002/PHYS112/	Physcis course 112 at UC Berkeley. Material. Course fall 2002	11/14/02.

10	http://www.physics.lsa.umich.edu/newman/courses/2002/p406/	course on thermal physics, physics 406 , umich.	11/14/02.
11	http://www.crab.rutgers.edu/~cowley/thermal1/textbooks.htm	list of physics books on thermal physics.	11/14/02.
12	http://tigger.uic.edu/~jmarko/phys461.99.html	course material for thermal physics. Course 461. Univ of Illinois at Chicago	
13	http://wug.physics.uiuc.edu/courses/phys361/fall02/	contains lecture notes for thermal physics course at UIUC	11/16/02
14	http://bguy.mse.uiuc.edu/matse390/	course material, physc 363, atomic-scale simulation, at UIUC	11/16/02
15	http://guava.physics.uiuc.edu/~nigel/courses/462/	course material, physics 462, statistical mechanics at UIUC	11/16/02
16	http://wug.physics.uiuc.edu/courses/phys114/fall02/index.html	lecture notes. Intro to quantum mechanics. UIUC phy 114	11/16/02
17	http://wug.physics.uiuc.edu/courses/phys113/fall02/index.html	lecture notes, thermal physics. UIUC, phy 113	11/16/02
18	http://wug.physics.uiuc.edu/courses/phys211/fall02/	lecture notes, phy 211. UIUC. Mechanics	11/16/02
19	http://www.how-why.com/ph420/	lecture notes, phy 420. Nonlinear Dynamics and Chaos - A Toolbox for Complex Systems Research.	
20	http://w3.physics.uiuc.edu/~mstone5/ma/ma.html	lecture notes, math methods. UIUC, phy 411	
21	http://vishnu.mth.uct.ac.za/omei/gr/index.html	tensors and relativity web site	8/10/07
22	http://lectureonline.cl.msu.edu/~mmp/applist/applets.htm	physics applets collection	8/10/07
23	http://blogphysica.wordpress.com/books-and-reviewsunder-construction/mathematical-physics/	books on mathematical physics	
24	http://www.aip.org/pnu/	physics news update.	
25	http://panoramix.ift.uni.wroc.pl/~maq/eng/index.php	computer simulation in physics web site.	
26	http://sodaplay.com/creators/soda/items/constructor	Sodaconstructor is a construction kit for interactive creations using masses and springs	
27	http://panoramix.ift.uni.wroc.pl/~maq/eng/index.php	computational Physics applications	
28	http://real.uwaterloo.ca/~mbody/	links on dynamic	
29	http://www-unix.mcs.anl.gov/LANS/	numerical lab in Argon	
30	http://mech.vub.ac.be/multibody/topics/canon.htm	cool dynamic simulation applications. Robotics and Multibody Mechanics Vrije Universiteit Brussel. Page has links to Multibody systems dynamics	
31	http://www.cs.cmu.edu/~baraff/papers/index.html	Baraff Papers and Technical Reports on physics simulation	July 5, 2015

32	http://www.cs.brown.edu/research/ai/dynamics/home.html	on-line course on dynamics. Looks good. Contains Mathematica files.	
33	http://pup.princeton.edu/catalogs/series/cpe.html	collected papers of Einstein	
34	http://www.alberteinstein.info/	Einstein digitized archive	
35	http://aip.jobcontrolcenter.com/search.cfm	physics jobs at physics today web site	
36	http://physics.bu.edu/py106/Notes.html	nice and easy to follow notes for basic physics (physics 7).	sept 6, 2003.
37	http://dmoz.org/Science/Physics/	Many links for science.	
38	http://www.resonanceresearch.com/	Physics equipments for musumes. Large discharge capacitors. Contains real footage of sparks in air	
39	http://www.cramster.com/index.aspx	contains some solved problems from text books, but needs subscription.	
40	http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html	a web site full of physics education material, called hyperphysics, from georgia state university	july 11, 2003
41	http://mech.vub.ac.be/multibody/topics/canon/canon_links.htm	dynamic simulation links	
42	http://www.fourmilab.ch/etexts/einstein/specrel/www/	Einstein 1905 paper on-line	9/27/07
43	http://www.fourmilab.ch/etexts/einstein/E_mc2/www/	Einstein the $E=mc^2$ paper	9/27/07
44	http://www.myphysicslab.com/source/	source code for Java that does physics simulation. To run simulation offline, double click on the jar file If double-clicking Lab.jar doesn't work (and you are sure that Java is installed) try typing at your command line <code>java -jar Lab.jar</code>	9/27/07
45	http://www.me.berkeley.edu/ME298-52/	instructions how to make simulation movies.	
46	http://www.motionmountain.net/index.html	Motion Mountain, The free physics textbook	
47	http://dea.iqanta.info/publications/lecture_thesis/1998a_branson_ucsd_130A.pdf	UCSD physics 130A lecture notes in one PDF file	12/14/09
48	http://www.upscale.utoronto.ca/GeneralInterest/All.html	Univ. Toronto, Canada, has lots of articles many on physics.	
49	http://physics-animations.com/	Physics animations	
50	http://www.falstad.com/	Paul Falstad's home page, lots of very good java physics applets	June 23, 2003
51	http://www.real-world-physics-problems.com/gyroscope-physics.html	"Gyroscope Physics Gyroscope physics is one of the most difficult concepts to understand in simple terms"	
52	http://www.cs.cornell.edu/courses/cs5643/2010sp/	CS 5643: Physically Based Animation for Computer Graphics Spring 2010, Cornell.edu	

53	http://www.colorado.edu/physics/phet/	Lots of physics applets, Univ. of Colorado	
54	http://www.ph.biu.ac.il/~rapaport/java-apps/	Rapaport's Scientific Java simulations applets	June 2003
55	http://www.geom.uiuc.edu/~worfolk/apps/	Patrick Worfolk's Home Page, numerical simulation using java includes source code	June 2003
56	http://vento.pi.tu-berlin.de/fli.html	cool science applets in Java	
57	http://electron6.phys.utk.edu/phys513/Modules/module6/extras6.htm	good physics problems, from Physics 513, Fall 2015 at The University of Tennessee, Department of Physics and Astronomy	
58	https://www.hepforge.org/projects	HepForge projects, "HepForge is a development environment for any sort of academic software projects related to high-energy physics", software to download	
59	https://phys.org/	Physics news	
60	http://www.opensourcephysics.org/	"The OSP Collection provides curriculum resources that engage students in physics, computation, and computer modeling. Computational physics and computer modeling"	April 2017
61	http://www.real-world-physics-problems.com/instant-center.html	has good problems on instantaneous center of zero velocity for rigid body rotation	Oct 2017
62	https://www.youtube.com/watch?v=4X81TUWchGA	good youtube video on finding instantaneous center of zero velocity	
63	http://weelookang.blogspot.com/	Open Source Physics , Singapore	Non 29, 2017

7.3 Computational Physics, CFD, FEM, numerical computation

1	http://www.gnu.org/software/gsl/design/gsl-design.html	GNU scientific library	
2	http://www.siam.org/meetings/	SIAM, meetings	
3	http://www.siam.org/students/resources/cse_programs.php	SIAM, links to programs in computational sciences.	
4	http://www.yorku.ca/marko/ComPhys/	"A package of Maple worksheets to accompany a physics undergraduate curriculum"	12/9/2005
5	http://en.wikipedia.org/wiki/List_of_numerical_analysis_topics%23Numerical_partial_differential_equations	Wikipedia, List of numerical analysis topics. Contains good definitions of numerical related terms and summary list of all numerical methods.	
6	http://amath.unc.edu/	CCIAM Carolina Center for Interdisciplinary Applied Mathematics 9/24/10	
7	http://mmg.atm.ucdavis.edu/teaching/atm-255/	ATM 255 at UC davis, fall 2010, numerical simulation in weather 9/24/10	

8	http://www.math.sjsu.edu/~foster/math243/math243f10.html	Course material, lots of matlab code, Math/CS 243A, Advanced Numerical Analysis (Numerical Partial Differential Equations), SJSU, FALL 2010 9/10/10	
9	http://www.math.sjsu.edu/~foster/cs143mf09.html	Math/CS 143M, Numerical Analysis (Matrices) Fall 2009, Dr Foster, SJSU. Contains good handouts on general numerical stuff, such as conditions numbers, decomposition, Text: Fundamentals of Matrix Computations, 2nd edition, by David Watkins 9/10/10	
10	http://www.math.sjsu.edu/singular/matrices/	San Jose State University Singular Matrix Database maintained by Leslie Foster. "collection of numerically singular matrices that arise in real applications" 9/10/10	
11	http://physics.ucsd.edu/students/courses/spring2009/physics142/	Computational Physics 142/242 course at UCSD	
12	http://www.math.wisc.edu/~jin	computational courses by Dr Shi Jin at university Wisconsin, Madison	2011
13	http://www.math.umn.edu/~olver/pdn.html	very good notes on numerical solutions of PDE, by Peter J. Olver	
14	http://www.resnet.wm.edu/~jxshix/math490/	Good course, on numerical PDE. Math 490-01 Partial Differential Equations and Mathematical Biology Spring 2004 by Junping Shi 1/10/11	
15	http://channelflow.org/dokuwiki/doku.php	channelflow.org, has software system for numerical analysis of the incompressible Navier-Stokes flow in channel geometries, written in C++. 1/10/11	
16	http://12000.org/my_notes/schools_ranking/computational_in_USA/computational_in_USA.htm	List of universities with computational degrees	
17	http://www.math.wisc.edu/~waleffe/M801/F00/index.html	Math 801: Fall 2000, Selected Problems in Scientific Computing. university Wisconsin, Madison by Dr Fabian Waleffe	april 17, 2013
18	http://info.sjc.ox.ac.uk/scr/sobey/iblt/index.html	contains notes on PDE and has some C code on multigrid	2/25/11
19	http://en.wikipedia.org/wiki/List_of_information_graphics_software	List of information graphics software, wikipedia	
20	http://www.math.wisc.edu/~angenent/Free-Lecture-Notes/index.html	The Free Lecture Notes Page university Wisconsin, Madison by Dr Sigurd Angenent (heat and diffusion equations in differential geometry)	2014
21	http://www.journals.elsevier.com/journal-of-computational-physics/	Elsevier Journal of Computational Physics	

22	http://epubs.siam.org/journal/sjoc3	SIAM Journal on Scientific Computing	
23	http://en.wikipedia.org/wiki/List_of_finite_element_software_packages	wikipedia List of finite element software packages	
24	http://www.math.wisc.edu/~spagnolie/Courses/MATH715/TopTenAlgorithms.pdf	Top Ten Algorithms of the 20th Century	
25	https://computation.llnl.gov/casc/index.php	Center for Applied Scientific Computing at LLNL.gov	
26	http://faculty.cse.tamu.edu/davis/research.html	Sparse matrix algorithms and software	
27	http://www.mcs.anl.gov/petsc/	ANL.gov software for scientific computation	
28	http://scicomp.stackexchange.com/	stackexchange computational forum	
29	http://people.sc.fsu.edu/~jburkardt/f_src/f_src.html/	John Burkardt site at FSU.edu, contains fortran routine to solve poisson PDE on rectangle using FEM and many other useful computational code.	
30	http://www.math.utep.edu/Faculty/sewell/odes_pdes/	Book site for "The Numerical Solution of Ordinary and Partial Differential Equations, 3rd Edition," by Granville Sewell, World Scientific Publishing Company, 2015	
31	http://physics.clarku.edu/sip/books.html	good list of Books on Computational Physics	
32	http://en.wikipedia.org/wiki/List_of_numerical_analysis_topics	List of numerical analysis topics From Wikipedia.	
33	http://www.win.tue.nl/~hochsten/software.html	Michiel Hochstenbach List, numerical software (Numerical Linear Algebra, Numerical Mathematics)	
34	http://www.columbia.edu/~gb2030/COURSES/E6302/APMA-E6302.html	Columbia.edu, APAM 6302 - Numerical Methods/PDE.	3/18/11
35	http://www.ldeo.columbia.edu/~mspieg/mmm/	Columbia.edu, G6943 Spring 2004, course in mathematica modeling	3/18/11
36	http://www.cs.nyu.edu/courses/spring06/G22.2421-001/index.html	NYU.edu G63.2020/G22.2421 Numerical Methods II	3/19/2011
37	http://www.cs.nyu.edu/courses/spring06/G22.2945-001/index.htm	NYU.edu Advanced Numerical Analysis: Finite Element Methods	3/19/2011
38	http://cs.nyu.edu/cs/faculty/overton/g22_opt/index.html	NYU.edu G22.2750/G63.2031 , Non-linear Optimization	3/19/2011
39	http://www.cs.nyu.edu/courses/spring06/G22.2945-002/	NYU.edu G22.2945.002/G63.2012 , Integral Equations, Fast Algorithms, and Potential Theory	3/11/2011
40	http://math.nyu.edu/faculty/greengar/painless-conjugate-gradient.pdf	NYU.edu PDF on conjugate gradient method.	3/11/2011

41	http://web.eecs.utk.edu/~dongarra/etemplates/index.html	book site, Templates for the Solution of Algebraic Eigenvalue Problems Edited by Zhaojun Bai, James Demmel, Jack Dongarra, Axel Ruhe, and Henk van der Vorst	3/11/2011
42	http://www.cs.rpi.edu/~flaherje/	Joseph E. Flaherty site, contains good class notes on many computational things	1/31/2011
43	http://dealii.org/developer/doxygen/deal.II/Tutorial.html	Deal.II tutorials on Finite elements, c++, deal.II library is free software	4/2/2015
44	http://libmesh.github.io/examples.html	libmesh library for finite elements with examples. "The libMesh library provides a framework for the numerical simulation of partial differential equations using arbitrary unstructured discretizations on serial and parallel platforms"	4/2/2015
45	http://ww2.odu.edu/~agodunov/computing/lib_net.html	links to more software scientific sites. Fortran programs	12/4/10
46	https://www.csc.fi/web/elmer/application-examples	Elmer, Finite elements software, has few videos. "Elmer is an open source multiphysical simulation software mainly developed by CSC - IT Center for Science (CSC). "	
47	http://milamin.sourceforge.net/	Milamin, open source Finite elements, in Matlab	
48	http://www.ibiblio.org/pub/languages/fortran/append-e.html	"QUICK REFERENCE TO NETLIB LIBRARIES"	
49	http://www.netlib.org/lapack/lug/node37.html#seccomp	Listing of Computational Routines in Lapack	
50	http://computationalmathematics.org/topics/files/IC.html	Fortran listing of incomplete cholesky factorization	
51	http://www.netlib.org/slatec/	slatec computational Fortran library. 1400 general purpose mathematical and statistical routines written in Fortran 77	
52	http://inside.mines.edu/~vgriffit/	Dr D. V. GRIFFITHS home page, Mine.edu, author of finite elements book "Programming the finite element method" and "Numerical methods for engineers" in Fortran 95.	
53	http://www.math.tamu.edu/~bangerth/videos.html	By prof. Wolfgang Bangerth, lectures on FEM "Starting in the spring 2013, I videotaped the lectures for my MATH 676: Finite element methods in scientific computing course at the KAMU TV studio at Texas A&M"	
54	http://lorenabarba.com/blog/cfd-python-12-steps-to-navier-stokes/	Lorena A. Barba group CFD Python: 12 steps to Navier-Stokes CFD notes, Python	

55	http://www.colorado.edu/engineering/CAS/courses.d/IFEM.d/	Finite elements course, Introduction to Finite Element Methods (ASEN 5007) Fall 2014 Department of Aerospace Engineering Sciences University of Colorado at Boulder has good notes online, basic matrix methods, stiffness method.	
56	http://www.math.wisc.edu/~spagnolie/Courses/MATH715/index.html	MATH/CS 715: Methods of Computational Mathematics II, Spring 2015, UW madison	
57	https://www.particleincell.com/2012/finite-element-examples/	Finite elements in Matlab	
58	http://femcodes.nscee.edu/download.html	The Finite Element Method: Basic Concepts and Applications Second Edition. Darrell W. Pepper and Juan C. Heinrich, has F77 code	
59	http://graphics.cs.cmu.edu/nsp/course/15-869/2006/papers/jakobsen.htm	article on Advanced Character Physics by Thomas Jakobsen	
60	http://goatstream.com/research/thesis/index.html	Animating Virtual Characters using Physics-Based Simulation Thomas Geijtenbeek, PhD Thesis	
61	http://thiagocosta.net	Has particle physics simulation videos.	
62	https://cs.uwaterloo.ca/~kogeddes/cs371/index.html	CM 271 / AMATH 341 / CS 371 Introduction to Computational Mathematics, course notes at Univ Waterloo. Also here uses Matlab, and here	
63	http://www.conference-service.com/conferences/computational-physics.html	Conferences and Meetings on Computational Physics and Numerical Simulation. see main page at www.conference-service.com	3/5/16
64	https://sites.google.com/site/kolukulasivasrinivas/matlab-fea/plate/stress-recovery	good blog page on how to calculate stress at nodes of element from in post processing from stress at Gaussian points. Three methods listed	May 2016

7.4 Mechanics specific

1	http://www.eng.fsu.edu/~hollis/egm5444-s02/	advanced dynamics on-line course at Florida state univ. good notes, HWs and solutions	5/15/03
2	http://arxiv.org/list/physics.class-ph/recent	Arxiv classical physics archives	
3	http://www-personal.umich.edu/~alexei/Ph507.htm	This is an online course with notes, course is Physics 507, theoretical mechanics at UMICH	07/29/2008
4	http://www.phys.uri.edu/~gerhard/PHY520/topics520.html	good notes on dynamics and mechanics	4/7/09
5	http://www.fs.cvut.cz/en/U2052/node60.html	has good example on virtual work to show how to use it to solve for unknown force in a static equilibrium problem	9/4/09

6	http://ocw.mit.edu/NR/rdonlyres/Aeronautics-and-Astronautics/16-61Aerospace-DynamicsSpring2003/D453E02B-5218-4154-8531-DB35ECD76A6C/0/lecture9.pdf	PDF on virtual work from MIT	9/6/2009
7	http://imechanica.org/taxonomy/term/22	List of Timoshenko Medal, and Timoshenko lectures	
8	http://www.cs.rpi.edu/~trink/sim_packages.html	Survey "the capabilities of the packages with respect to rigid body dynamics with intermittent unilateral contact." by Ying Lu	
9	http://lpsa.swarthmore.edu/Systems/MechTranslating/TransMechSysModel.html#Free_Body_Diagrams_	Lots of free body diagrams	
10	http://www2.eng.cam.ac.uk/~hemh/	Dr Hugh Hunt, Has mechanics demos, eng. dept	
11	https://www.youtube.com/watch?v=4t87kZ0pAUc	You tube, DrPhysicsA, explains gyroscope well	
12	http://www.physics.ohio-state.edu/~kilcup/2300/	Physics 2300, Autumn 2015, ohio-state.edu by Prof. Kilcup, has good HW problems to study, some from Morion text book	Oct 2015
13	http://www.physics.buffalo.edu/phy302/index.html	PHY 302, Intermediate Mechanics 2, physics.buffalo.edu, has good problems in Lagrangian mechanics. Spring 2011	
14	http://www.hep.manchester.ac.uk/u/forshaw/AdvDyn/PC1672.html	Problem sets for Gravitation and Rotational dynamics. Advanced Dynamics course, from Manchester Particle Physics Group	
15	http://exir.ru/solutions/	created in 2002 as the collection of solutions for I.E. Irodov Problems in General Physics. This book is very popular in Russian technical universities	
16	http://ttf2009.ucsd.edu/students/courses/fall2010/physics110a/	Physics 110A, classical mechanics, USCD course web site	12/22/2015
17	http://www.physics.umd.edu/courses/Phys410/gates/index.html	Physics 410: Classical Mechanics, fall 2005, umd.edu course web site	12/20/2015
18	http://web.physics.ucsb.edu/~phys105A/	Physics 105A: Classical Mechanics, UCSB web site, Winter 2012	12/20/15

7.5 Astrodynamics, Kepler, orbits

1	http://www.staff.uiuc.edu/~prussing/bio.html	prof Prussing. Author of book on astrodynamics.	
2	http://eaa.iop.org/index.cfm?action=home	Encyclopedia of Astronomy and Astrophysics	

3	http://ascl.net/	ASCL.net, Astrophysics Source Code Library. has Code that solves kepler equation. Was SALIB (astronomy code library)	
4		W.H.Goodyear 1965. Astronomical Journal 70, 189-192. paper on the for universal method.	
5	http://www.willbell.com/math/mc12.htm	"Solving Kepler's Equation Over Three Centuries" by Peter Colwell. Published by Willmann-Bell, Inc. Richmond, Virginia 1993	
6	http://www.math.uncc.edu/~droyster/courses/spring98/math2242/vectorcalc.html	links to page with vector calculus. UNCC.edu	
7	http://www.willman-bell.com/	Publisher of books on astronomy. Ordered few books from them in april 2003	
8	http://www.seds.org/billa/astrosoftware.html	solar system simulation software	
9	http://www.kiasystems.ru:8101/english/products/manevr.html	about calculation of orbital rendezvous	may 15, 2003
10	http://www.medphys.ucl.ac.uk/~martins/orbit/orbit.html	space flight simulator	
11	http://cdeagle0.tripod.com/	Celestial and Orbital Mechanics Web Site. Lots of applications and freeware. Also technical reports	may 15, 2003
12	http://www.geocities.com/SiliconValley/2902/ctrans.htm	on-line program to use to find total delta V to transfer from one circular to another circular orbits, co-planers. And it gives the time to transfer.	
13	http://aerounix.tamu.edu/~alfriend/slides/Ch3Pt1.pdf http://aero.tamu.edu/ http://aerounix.tamu.edu/~alfriend/	Good review of Hohmann orbit changes	5/15/03
14	http://www.astronautix.com/index.html	Encyclopedia astrodynamics	
15	http://www.lunarsat.de/	web site on astronomy and related, mostly about moon travel.	
16	http://www.projectrho.com/rocket/supplement/orbitalmech.html	Article on Fundamentals of Orbital Mechanics	
17	http://www.braeunig.us/space/index.htm	Lots of stuff on space and rockets, algorithms and programs by Robert A. Braeunig	
18	http://www.bogan.ca/orbits/gravasst/gravasst.html	Notes on Satellite Orbits - Gravitational Assist from Planets by Larry Bogan	

19	http://ccar.colorado.edu/	"The Colorado Center for Astrodynamics Research (CCAR) is dedicated to the study of astrodynamics and the application of satellites to science, navigation, and remote sensing of the Earth and planets" Lots of student reports can be found	June 30, 2015
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7.6 Physics online courses

1	http://freescienceonline.blogspot.com/	science video download	
2	http://www.learner.org/resources/series42.html/	A video instructional series on physics for college and high school classrooms and adult learners; 52 half-hour video programs and coordinated books	
3	http://plato.phy.ohiou.edu/~rollinsr/phys605/	classical mechanics on-line course	11/23/08
4	http://www.algarcia.org/Phys230.html	Physics 230, San jose state, for Msc physics	6/25/08
5	http://cannoli.mps.ohio-state.edu/phy664/	Physics 664 - Theoretical Mechanics - Fall 2004 ohio state. Contains problems and solutions	8/29/09
6	http://www.phys.psu.edu/~lammert/419/index.html	Physics 419: Theoretical Mechanics PSU, contains final exam and solutions. Good basic course to study from, also contains HW's and solutions.	8/29/09
7	http://www.physics.rutgers.edu/grad/507/	physics 507, classical mechanics, fall 2013. Rutgers univ. Has solutions for Goldstein book	1/24/2014
8	http://www.physics.ohio-state.edu/~kilcup/2300/	Physics 2300 – Autumn 2015, Ohio State Univ. Similar to Physics 311 I took at UW madison. Has good problems to practice on	
9	http://www.gravity.phys.uwm.edu/~pchang/Site/Teaching.html	Dr Philip Chang teaching courses, physics dept. Univ. Wisconsin, Milwaukee	Dec 1, 2015

7.7 Mathematical Physics

1	http://www.math.odu.edu/~jhh/counter2.html	contains info about a book on tensor calculus and continuum mechanics. There is a free version of the book	Jan 14.2006
2	http://samizdat.mines.edu/kennett/	book on continuum mechanics	1/15/06
3	http://www.swarthmore.edu/NatSci/echeeve1/Class/e71/Fourier/Fourier.html	nice table showing relation between transfroms (Fouriers, discrete. Continues)	
4	http://www.iamp.org/	International Association of Mathematical Physics	
5	http://www.math.princeton.edu/~aizenman/OpenProblems.iamp/	open problems in mathematical physics.	

6	http://www.intlpress.com/ATMP/	ADVANCES IN THEORETICAL AND MATHEMATICAL PHYSICS journal.	
7	http://lanl.arXiv.org	arXiv , archive of on-line papers and journals	
8	http://www.ma.utexas.edu/mp_arc/	mathematical physics archives. Univ Texas	
9	http://blog.wolfram.com/2008/01/19/mathematica-and-the-fundamental-theorem-of-calculus/	article on the fundamental-theorem-of-calculus and use in Mathematica	

8 Mathematics

8.1 Perturbation theory

1	https://www.youtube.com/watch?v=LYNOGk3ZjFM	Mathematical Physics 01 - Carl Bender, youTube, perturbation theory. Pade summation. sum divergent series, boundary layer theory (for hard differential equations), WKB theory, Shanks transformation, ...Sequence of lectures.	oct 2016
2	http://www.damtp.cam.ac.uk/user/ps57/	good notes on Asymptotic Methods with lots of examples, expansion around ISP	
3	http://www.maths.manchester.ac.uk/~gajjar/magicalbooks/methods/notest1_2se15.html	Method of Dominant balance	
4	http://www.macs.hw.ac.uk/~simonm/F13YQ1/	F1.3YQ1 Asymptotic analysis, Third year module given in the Autumn term	
5	http://math.stackexchange.com/questions/1294581/behaviour-of-solutions-to-ode-near-singular-points	has Math answer, with WKB example	
6	https://en.wikipedia.org/wiki/WKB_approximation	WKB page at wikipedia	
7	http://www.math.lsa.umich.edu/~millerpd/CurrentCourses/557_Winter15.html	Peter D. Miller web page, Applied Asymptotic Analysis.	

8.2 Green function

1	https://en.wikipedia.org/wiki/Green's_function	wikipedia page: "The primary use of Green's functions in mathematics is to solve non-homogeneous boundary value problems"	7/3/16
2	http://www.maplesoft.com/applications/view.aspx?SID=136531	Document at Maplesoft "Green's functions This is a derivation and specific construction and application of Green's functions as an "Inverse" to differential operators.	

3	http://www.maplesoft.com/applications/view.aspx?SID=4820	Document at Maplesoft "For second-order ODEs, we compute the Green's function for both initial and boundary value problems."	
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8.3 Optimization

8.3.1 Dynamic programming

1	https://en.wikipedia.org/wiki/Bellman_equation	Wikipedia page on Bellman equation	
2	https://en.wikipedia.org/wiki/Dynamic_programming	Wikipedia page on Dynamic programming	
3	https://en.wikipedia.org/wiki/Hamilton-Jacobi-Bellman_equation	Wikipedia page on Hamilton–Jacobi–Bellman equation	
4	https://community.topcoder.com/tc?module=ProblemArchive	topcoder, select Dynamic programming from the category pull down menu	
5	http://acm.timus.ru/problemset.aspx	Timus Online Judge, select dynamic programming problems in the list down the page	
6	http://codeforces.com/problemset	select problems listed in table	
7	http://apps.topcoder.com/forums/?module=Thread&threadID=674592&start=0&mc=7#1237445	post with links to many DP problems	
8	https://www.codechef.com/wiki/tutorial-dynamic-programming	codechef tutorial page on DP. Top down, vs,. bottom-up	
9	https://www.seas.gwu.edu/~ayoussef/cs6212/	web page for CS 6212, Design and Analysis of Algorithms , has section on dynamic programming George Washington Univ.	4/5/16
10	http://liberzon.csl.illinois.edu/teaching/cvoc/node91.html	Calculus of Variations and Optimal Control Theory A Concise Introduction, Daniel Liberzon University of Illinois at Urbana-Champaign. Talks also about The Hamilton-Jacobi-Bellman equation	4/5/16
11	http://www.matapp.unimib.it/~calogero/andrea_materiale_didattica.html	Has pdf in the first link on optimal control in economics, by Andrea Calogero, University di Milano-Bicocca	
12	http://kurser.math.su.se/course/view.php?id=325	course material for Dynamic systems and optimal control theory, "The course deals with systems of linear differential equations, stability theory, basic control theory, some selected aspects of dynamic programming, optimal linear quadratic control or Kalman filter", Stockholms universitet. Use guest access to view	

8.3.2 Mathematical Optimization

1	http://www.mat.univie.ac.at/~neum/glopt/software_1.html	links to local optimization programs	
2	http://cvxr.com/cvx/	CVX matlab convex optimization package	
3	http://www.neos-guide.org/NEOS/index.php/Unconstrained_Optimization_Software	optimization software, Unconstrained Optimization Software	
4	http://www.mathopt.org/	website of the Mathematical Optimization Society "The Mathematical Optimization Society (MOS), founded in 1973, is an international organization dedicated to the promotion and the maintenance of high professional standards in the subject of mathematical optimization. Up to 2010 its name was "Mathematical Programming Society (MPS)"	
5	http://math.stackexchange.com/questions/1613589/proof-of-why-optimal-solutions-occur-at-extreme-points	asks why optimal solutions at extreme points	
6	http://www.brnt.eu/phd/node10.html	Basics on Continuous Optimization. Has table of Optimization algorithms and its cost function	
7	https://en.wikipedia.org/wiki/List_of_optimization_software	List of optimization software, Wikipedia	
8	https://www.youtube.com/watch?v=P3W_wFZ2kUo	Lecture 2 , Convex Optimization I (Stanford)	
9	https://www.math.ucdavis.edu/~deloera/TEACHING/MATH168/	MATH 168, MATHEMATICAL OPTIMIZATION at UC Davis, has links to good books in optimization, and class notes. Uses SCIP, SoPlex, ZIMPL	
10	https://www.youtube.com/watch?v=dPQK1tPBLfc	Lecture, Mod-01 Lec-30 Unconstrained optimization techniques : Direct search method, at 5:04, has classification of optimization methods. Direct vs. Gradient vs. random number based methods.	12/2015
11	http://www.neos-guide.org/optimization-tree	lists Types of Optimization Problems, and all algorithms, links. "Included below is an alphabetical listing of the algorithms that have a linked page with additional information. For a listing of algorithms by optimization problem type, see Algorithms by Problem Type."	
12	http://www.neos-guide.org/About	"he NEOS Server is a project run by the University of Wisconsin - Madison that allows anyone to submit optimization problems to state-of-the-art solvers"	

13	http://www.tandfonline.com/toc/gopt20/current	Optimization A Journal of Mathematical Programming and Operations Research	
14	http://www.mat.univie.ac.at/~neum/glopt/software_1.html	Local Optimization Software, part of Global Optimization "This is a comprehensive archive of online information on (almost exclusively non-commercial) global optimization, and somewhat less comprehensive on local optimization, collected by Arnold Neumaier" Computational Mathematics group at the University of Vienna, Austria.	1/20/16
15	http://ab-initio.mit.edu/wiki/index.php/NLOpt	"NLOpt is a free/open-source library for nonlinear optimization, providing a common interface for a number of different free optimization routines available online as well as original implementations of various other algorithms"	1/20/16
16	http://www.math.uwaterloo.ca/~hwolkowi/henry/software/misc.software.html	"Personal Collection of Miscellaneous Software Information" by Henry Wolkowicz at Department of Combinatorics and Optimization; Faculty of Math.; Univ. of Waterloo. Links to lots of software, many on optimization	
17	http://www.ime.usp.br/~egbirgin/tango/codes.php	Trustable Algorithms for Nonlinear General Optimization, The University of Campinas and University of Sao Paulo joint project for optimization software development. Has Fortran code	
18	http://www.mcs.anl.gov/~more/tron/	"TRON is a trust region Newton method for the solution of large bound-constrained optimization problems. TRON uses a gradient projection method to generate a Cauchy step, a preconditioned conjugate gradient method with an incomplete Cholesky factorization to generate a direction, and a projected search to compute the step" In Fortran by Chih-Jen Lin and Jorge More	
19	https://en.wikipedia.org/wiki/Maximum_principle	Maximum principle at Wikipedia, where it talks about maximum of a convex function on a compact convex set is attained on the boundary.	
20	http://math.stackexchange.com/questions/156829/multilinear-optimization	question on multilinear-optimization	1/22/16

21	http://link.springer.com/journal/10898	Springer "Journal of Global Optimization An International Journal Dealing with Theoretical and Computational Aspects of Seeking Global Optima and Their Applications in Science, Management and Engineering "	
22	http://www4.ncsu.edu/~ctk/matlab_darts.html	C. T. (Tim) Kelley site at ncsu.edu. Has Matlab functions for optimization	
23	https://en.wikipedia.org/wiki/Linear_programming	Linear programming page at Wikipedia, has open problems in LP	3/4/16
24	https://en.wikipedia.org/wiki/Conjugate_gradient_method	Conjugate gradient page at wikipedia, has formulas needed	

8.4 Misc. mathematics

1	http://www.swmath.org/	place to search for mathematical software. Like google, but for math	
2	http://www.ams.org	AMS, American Mathematical Society, meetings dates is here	
3	http://joshua.smcvt.edu/linearalgebra/	A Free text for a standard US undergraduate course . Linear algebra by Jim Hefferon, Mathematics Department, Saint Michael's College	
4	http://www.maa.org/publications/ebooks/anneli-lax-new-mathematical-library	Anneli Lax New Mathematical Library at MAA.org "Features fresh approaches and broad coverage of topics especially suitable for high school and the first two years of college" contains links to books available for download	March 5, 2015
5	http://cerebro.cs.xu.edu/math/Sources/	original papers by Euler and Laplace, translated to English	May 3, 2004
6	http://cerebro.cs.xu.edu/math/Sources/	original papers by Euler and Laplace, translated to English	May 3, 2004
7	http://www.math.sc.edu/~meade/math550-F97/	course on vector analysis with maple worksheets.	
8	http://eqworld.ipmnet.ru/index.htm	the world of mathematical equations. Great site!	august 11, 2005.
9	http://user.it.uu.se/~bette/BFcourse.html	course web page on Asymptotic Expansions with mathematica notebooks	2/18/2014.
10	http://folk.uio.no/kalie/OpSplit/AppendixA/demoA_4a.html	on flux limiter and Matlab code	
11	http://www.cecm.sfu.ca/organics/papers/borwein/paper/html/paper.html	paper on Calculating PI to large digits	4/2/2008
12	http://www.math.wisc.edu/~angenent/Free-Lecture-Notes/	Contains free lectures notes, instructor, applied math, univ Wisconsin	1/8/2011

13	http://www.math.wisc.edu/~jin/teaching.html http://www.math.wisc.edu/~jin/Teaching/S11/m715.html	Dr Jin, contains lots of math material for many courses, all applied math and numerical. univ Wisconsin.	1/8/2010
14	http://www.17centurymaths.com/contents/eulercontents.html	Euler early papers in pdf	7/5/2012
15	http://www.cisl.ucar.edu/softlib/mathlib.html	contains list of math libraries	
16	http://sunsite.ubc.ca/LivingMathematics/V001N01/UBCEamples/	visualize math	
17	http://www.ee.ic.ac.uk/hp/staff/dmb/matrix/intro.html	matrix reference manual	
18	http://gams.nist.gov/	NIST Guide to Available Mathematical Software GAMS	
19	http://opinionator.blogs.nytimes.com/2010/04/18/it-slices-it-dices/	contains nice analogy of staircase to help explain fundamental theory of calculus	
20	http://www3.nd.edu/~zxu2/math60-690-01.html	Math 60-690-01, Fall 2006 Numerical Analysis 1, ND.EDU	2/10/06
21	http://ocw.mit.edu/ans7870/resources/Strang/strangtext.htm	Calculus, by Strang, MIT.edu	1/10/2008
22	http://www.amath.washington.edu/courses/video/	applied math dept. Washington U, seattle. Collection of vedio courses	
23	http://archives.math.utk.edu/ICTCM/ http://hepg.awl.com/ictcm/	Electronic arhive of International Conference on Technology in Collegiate Mathematics	10/8/2005
24	http://www.ma.utexas.edu/mpej/	mathematical physics electronic journal	
25	http://www.ma.utexas.edu/users/mathphys/	mathematical physics web page at Utxas	
26	http://www.acad.polyu.edu.hk/~mayangxq/AMA202/comvar.pdf	contains good notes on complex variables. Definitions of open set, limit	may 2004
27	http://www.acad.polyu.edu.hk/~mayangxq/AMA202/comvar.pdf	contains good notes on complex variables. Definitions of open set, limit	may 2004
28	http://www.mathpages.com/home/kmath220/kmath220.htm	describes well how to find integrating factor for an ODE	
29	http://www.cliffsnotes.com/WileyCDA/CliffsReviewTopic/Exact-Equations.topicArticleId-19736,articleId-19710.html	This is really good note of basis of where integrating factors come from and why we use it for first order ODEs.	
30	http://www.comlab.ox.ac.uk/nick.trefethen/classic_papers.txt	Classical papers in numerical analysis	8/28/09
31	http://front.math.ucdavis.edu/	good selection of math papers. UC Davis	
32	http://www.phy.ornl.gov/csep/CSEP/BF/NODE32.html	references books and papers on numerical methods and physics	8/28/09

33	http://fourier.eng.hmc.edu/e101/	contains good notes, and table of fourier transforms	sept 19,2008
34	http://theheunproject.org/heun_functions.html/	"The Heun functions (named after Karl Heun:1859-1929) are unique local Frobenius solutions of a second-order linear ordinary differential equation of the Fuchsian type "	1/1,2015
35	http://primes.utm.edu/	"The Prime Pages: Prime Number Research, Records and Results"	
36	http://www.mathpages.com/	The mathpages site	
37	http://oeis.org/	the on-line encyclopedia of integer sequences	
38	http://mathworld.wolfram.com/	Wolfram math world site	
39	http://terrytao.wordpress.com/	Terry Tao's math Blog	
40	http://en.wikipedia.org/wiki/Nondimensionalization	Wiki article on "Nondimensionalization is the partial or full removal of units from an equation involving physical quantities by a suitable substitution of variables. "	
41	http://en.wikipedia.org/wiki/Wikipedia:Manual_of_Style/Mathematics	Wiki article on math writing styles	
42	https://www.youtube.com/watch?v=MkNfQtINEjo	Youtube, The rotation problem and Hamilton's discovery of quaternions IV	
43	http://www-math.mit.edu/~djkl18_01/chapter24/section03.html	On the Substitution $z = \tan \frac{x}{2}$	
44	http://www.numdam.org/?lang=en	Papers online	
45	http://www.ams.org/publications/journals/journalsframework/mcom	The mathematics of computation, americal mathematical society	
46	https://cs.uwaterloo.ca/40th/Chronology/printable.shtml	Chronology of events related to Computing at The University of Waterloo	
47	http://history.siam.org/oralhistories.htm	History of numerical analysis and scientific computing at SIAM	
48	http://www.math.wisc.edu/~street/mat627/	Fourier Analysis and applications course web site, Math 627, UW madison	
49	https://projects.exeter.ac.uk/fluidflow/Courses/FluidDynamics3211-2/DimensionalAnalysis/dimensionalLecturese4.html	Good review of Buckingham Pi theorem	
50	http://people.math.sfu.ca/~cbm/aands/	Abramowitz and Stegun: Handbook of Mathematical Functions, online version	July 22, 2015
51	http://dlmf.nist.gov/	NIST Digital Library of Mathematical Functions, this page talks about how these pages were generated using LatexXML	
52	http://www.calculatorsoup.com/	nice site with many calculations, for example this gives solid geometry for many shapes	

53	http://www.solitaryroad.com/c913.html	"Methods of finding Laplace transforms and inverse transforms. Properties of inverse Laplace transforms. Convolution of two functions. Convolution theorem. Heaviside expansion formulas." Also has table of transforms and good general notes on Laplace	Nov 2015
54	https://www.math.ucdavis.edu/~kouba/CalcOneDIRECTORY/preciselimdirectory/PreciseLimit.html	Has good examples and solutions of how to formally prove the limit using the ϵ and δ definition	
55	http://www.ams.org/news/math-in-the-media/math-in-the-media	AMS math in the media site	
56	https://www.quora.com/What-is-a-simple-way-to-understand-branch-points-in-complex-analysis	good description of branch cuts	1/12/16
57	https://en.wikipedia.org/wiki/Smale's_problems	"Smale's problems are a list of eighteen unsolved problems in mathematics that was proposed by Steve Smale in 1998"	
58	http://math.stackexchange.com/questions/1686156/in-simple-english-what-does-it-mean-to-be-transcendental	what it means to be transcendental, at math.stackexchange	
59	https://proofwiki.org/wiki/Main_Page	"ProofWiki is an online compendium of mathematical proofs". It seems though to have too many commercial ads on it, but it does have few useful proofs.	
60	http://functions.wolfram.com/	Wolfram functions site. Has information about almost any Mathematical function	
61	https://www.pinterest.com/mathematicsprof/	" Video Lectures in Mathematics.This site contains links to math videos"	
62	http://www.mathnet.ru/index.phtml?&option_lang=eng	All-Russian Mathematical Portal.	
63	http://www.learnerstv.com/index.php	"Welcome to Learnerstv.com. This is a comprehensive site providing thousands of downloadable Video lectures, Live Online Tests,etc in the fields of Biology, Physics, Chemistry, Mathematics, Computer Science, Engineering, Medicine, Management and Accounting, Dentistry, Nursing, Psychology, History, Language Training, Literature, Law, Economics, Philosophy,Astronomy, Political Science etc FREE to its visitors."	
64	https://www.youtube.com/user/LadislauFernandes	LadislauFernandes math video lecture on you tube. Group theory lectures	

65	http://www.learningideas.me.uk/clearmaths/	blog on writing math clearly, by Matthew Leitch	
66	http://www.lmfdb.org/	the database of L-functions, modular forms, and related objects. Prime numbers related	

8.5 Math and Numerical libraries

1	http://www.netlib.org/toms/	netlib ACM Collected Algorithms	
2	http://math-atlas.sourceforge.net/	"Automatically Tuned Linear Algebra Software (ATLAS) The ATLAS (Automatically Tuned Linear Algebra Software) project is an ongoing research effort focusing on applying empirical techniques in order to provide portable performance. At present, it provides C and Fortran77 interfaces to a portably efficient BLAS implementation, as well as a few routines from LAPACK."	
3	http://www.netlib.org/lapack/	LAPACK Linear Algebra PACKage "LAPACK is written in Fortran 90"	
4	http://www.cems.uvm.edu/~tlakoba/math337/	Welcome to the Web page of Math 337, Numerical Differential Equations	

8.6 Mathematical modeling

1	http://www.euclideanspace.com/	3D world physics simulation. Lots of information on how to do simulation for 3D. contains lots of reference books on 3D physics modeling and simulation	June 2003
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8.7 Heat PDE on semi-infinite domain

1	https://math.stackexchange.com/questions/434552/semi-infinite-heat-diffusion-equation-with-time-dependent-b-c-at-x-0	question/answer at math.stackexchange	
2	https://math.stackexchange.com/questions/456504/advection-diffusion-equation-on-semi-infinite-domain	question on Advection Diffusion Equation on Semi-Infinite Domain at math stx	
3	http://onlinelibrary.wiley.com/doi/10.1002/9781118411285.ch6/summary	book, Solution of the Heat Equation for Semi-Infinite and Infinite Domains	

8.8 links to pages that contains list of PDE's and ODE's

1	https://en.wikipedia.org/wiki/List_of_nonlinear_partial_differential_equations	list of nonlinear PDE's	May 18, 2018
2	https://en.wikipedia.org/wiki/List_of_nonlinear_ordinary_differential_equations	List of nonlinear ordinary differential equations	
3	https://math.stackexchange.com/questions/2232143/large-list-of-ordinary-differential-equations-for-practice?utm_medium=organic&utm_source=google_rich_qa&utm_campaign=google_rich_qa	answer at stackexchange which gives link to resources with large collection of ODE's	
4	https://ipfs.io/ipfs/QmXoyvizjW3WknFiJnKLwHCnL72vedxjQkDDP1mXWo6uco/wiki/List_of_nonlinear_partial_differential_equations.html	list of nonlinear PDEs	5/18/18
5	http://www.wikiwand.com/en/List_of_partial_differential_equation_topics	contains list of Specific partial differential equations	5/18/18
6	https://www.ljll.math.upmc.fr/frey/cours/UdC/ma691/ma691_ch3.pdf	PDF file, contains "Following is a list of partial differential equations commonly found in mathematical applications"	5/18/18
7	http://eqworld.ipmnet.ru/eqarchive/list_sec.php	equation world, "Categorized List of Equations"	5/18/18

8.9 PDE and differential equations

1	http://www.mathworks.com/help/symbolic/mupad_ug/solve-ordinary-differential-equations-and-systems.html	Mupad DE page, shows how to solve ode and has classification table showing what solver is used for different ode class	7/13/16
2	http://www.aw-bc.com/ide/index.html	interactive differential equations.	
3	http://www.sosmath.com/diffeq/diffeq.html	UW link. Contains lots of stuff on ODE	
4	http://www.sosmath.com/diffeq/diffeq.html	On-Line help for Partial Differential Equation Texts and Tools. part of prof Floyd Hanson, univ. of illinois math dept. web page http://www.math.uic.edu/~hanson/ This page contains an AMAZING amount of information using Maple, matlab, etc	june 5, 2003
5	http://www.scholarpedia.org/article/Partial_differential_equation	Partial differential equation page at scholarpedia.org	June 30, 2015

6	http://www.math.wisc.edu/~sondak/teaching/MATH322-Fall2015/MATH322.html	David Sondak's Math 322, on PDE's. Univ. Wisconsin, Madison, fall 2015 web site	12/20/2015
7	http://www.math.wisc.edu/~sondak/teaching/MATH322-Fall2014/MATH322.html	David Sondak's Math 322, on PDE's. Univ. Wisconsin, Madison, fall 2014 web site	12/20/2015
8	http://www.math.wisc.edu/~jeanluc/322.php	Jean-Luc Thiffeault's Math 322 Applied Mathematical Analysis II: Fall 2013, PDE course, Univ. Wisconsin	12/20/2015
9	http://www.math.wisc.edu/~jeanluc/321.php	Jean-Luc Thiffeault's Math 321 Applied Mathematical Analysis I (Spring 2013) web site, Univ. Wisc. Madison	12/20/2015
10	http://www.math.wisc.edu/~waleffe/M321/S09/index.html	Fabian Waleffe's Math Math 321, Spring 2009 Advanced Calculus for the Physical Sciences web site, Univ. Wisc. Madison	12/20/2015
11	http://www.math.wisc.edu/~waleffe/M321/S11/index.html	Fabian Waleffe's Math Math 321, Spring 2011 Advanced Calculus for the Physical Sciences web site, Univ. Wisc. Madison	12/20/2015
12	http://math.stackexchange.com/questions/163466/singular-points-of-ode	Example at math forum on checking type of singular points for an ODE	
13	https://www.youtube.com/watch?v=r0-f3zh3_kw	Dr Chris Tisdell youtube lecture on solving pde using factorization	Jan 2018
14	https://onlinelibrary.wiley.com/journal/10982426	Numerical Methods for Partial Differential Equations. "An international journal that aims to cover research into the development and analysis of new methods for the numerical solution of partial differential equations"	5/18/19
15	https://en.wikipedia.org/wiki/Burgers%27_equation	wikipedia Burgers equation, solution to Burger's viscid PDE at wikipedia	May 2018

8.10 D'Alembert's first order non-linear ODE

1	https://en.wikipedia.org/wiki/D%27Alembert%27s_equationg1	wikipedia entry	August 10, 2018
2	https://math.stackexchange.com/questions/2340695/solution-of-nonlinear-ode-x-yy-y2	math forum solution to one such ODE	August 10, 2018

8.11 Contour integration

1	https://en.wikipedia.org/wiki/Contour_integration	wikipedia entry, has example of integrations that can be done using complex Contour integration	Oct 20, 2018
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2	http://web.williams.edu/Mathematics/sjmiller/public_html/302/coursenotes/Trapper_MethodsContourIntegrals.pdf	PDF, Univ. Of Bristol. Examples of integrations that can be done using complex Contour integration, 4 types are gives	Oct 20, 2018
3	http://www1.spms.ntu.edu.sg/~ydchong/teaching/08_contour_integration.pdf	By Y.D.Chong, has examples of integrations that can be done using complex Contour, with nice diagrams. Has Jordan's lemma. MOre lecture PDF's at web.spms.ntu.edu.sg/~ydchong/teaching.html	Oct 20, 2018
4	http://web.spms.ntu.edu.sg/~ydchong/teaching/02_integrals.pdf	By Y.D.Chong,Page 16 has example of using differentiation under the integral sign to solve $\int \frac{\sin x}{x} dx$	Oct 20, 2018
5	https://en.wikipedia.org/wiki/Jordan%27s_lemma	Wikipedia page for Jordan's lemma	Oct 20, 2018

8.12 Archives, places to find original work and papers

1	http://eulerarchive.maa.org/	Eulers work archive	Nov 2018
2	https://archive.org/details/werkecarlf03gausrich	Entry at archive.org, digitized book of Gauss work	Nov 2018

9 Computer algebra

9.1 Courses in computer algebra

1	http://www-math.uni-paderborn.de/mca/	modern computer algebra course online, with worked homeworks	10/2/2002
2	http://www.math.fsu.edu/~hoeij/	Dr Mark van Hoeij, Computer Algebra course, MAS 5741, Florida State University, FSU. edu class schedule is here but the above is not work.	
3	http://www.cs.drexel.edu/~jjohnson/	teaches CAS at drexel	1/1/2000
4	http://www.cs.drexel.edu/~jjohnson/2010-11/fall/cs567.html	CAS course, drexel.edu, fall 2010	12/3/2010
5	http://www.cs.drexel.edu/~jjohnson/2010-11/fall/cs300.html	Another CAS course, drexel.edu, fall 2010	12/4/2010
6	http://www.cs.drexel.edu/~jjohnson/2005-06/fall/cs300.html	Another CAS course, drexel.edu, fall 2005.	dec 9,2005
7	http://www.cs.drexel.edu/~jjohnson/sp03/cs300.html	This is another course as the above but different year. 2003	dec 9,2005
8	http://www.cs.drexel.edu/~jjohnson/wi00/ca1.html	a computer algebra course by the same instructor as the above 2. uses Maple	dec 9,2005

9	http://www.cs.drexel.edu/~jjohnson/sp00/ca2.html	computer algebra 2 course, same instructor as above	dec 9,2005
10	https://aisg.sfu.ca/cos/wcOutlineView.aspx?crsOutId=10237	CAS course at SFU	1/1/2000
11	http://www.cs.drexel.edu/~jjohnson/sp00/ca2/lectures/apr5.html	Lecture notes CAS course at SFU	1/1/2000
12	https://www.sfu.ca/students/calendar/2016/spring/courses/macm/401.html	Introduction to Computer Algebra MACM 401 , spring 2016,Simon Fraser University, Canada	
13	https://www.cs.drexel.edu/~bchar/	Dr Bruce Char, teaches CAS at Drexel, CS 300 Applied Symbolic Computation also taught by Dr. Jeremy Johnson. Course uses Maple. in computer science dept	1/1/2000
14	http://www.kauers.de/index.html	kauers.de , teaches computer algebra, Johannes Kepler University Manuel Kauers,Institute for Algebra, A-4040 Linz, Austria	6/1/2015
15	http://www.risc.jku.at/	RISC institute for symbolic computation. They offer PhD in CAS. But the link to the PhD poster is not working.	6/1/2015
16	http://www.math.rutgers.edu/~zeilberg/math640_16.html	Math 640, EXPERIMENTAL MATHEMATICS (Famous Open Problems) Spring 2016 (Rutgers University) uses Maple	
17	http://www.mapleprimes.com/posts/200223-MiniCourse-Computer-Algebra-For-Physicists	"This is a 5-days mini-course I gave in Brazil last week, at the CBPF (Brazilian Center for Physics Research). " by Edgardo S. Cheb-Terrab, Maplesoft	March 31 2014
18	https://www.math.ucdavis.edu/~deloera/TEACHING/MATH165/	MATHEMATICS AND COMPUTERS MATH 165, UC Davis. Offered in fall. "This class will use MAPLE as the software for class discussion, tests, homeworks, projects"	

9.2 Maple

1	http://www.maplesoft.com/documentation_center/	To get current PDF manuals. Scroll down the page, will see Maple manuals. Currently at 2016 version	2016
2	http://www.maplesoft.com/documentation_center/maple18/UserManual.pdf	PDF file, from Maplesoft, Maple manual for Maple 18	1/1/2000
3	http://www.maplesoft.com/view.aspx?SF=87/GettingStartedGuide.pdf	PDF maple getting started guide	1/1/2000
4	ftp://ftp.inf.ethz.ch/pub/maple/	Contains ftp for Maple Share Library archives	1/1/2015

5	http://grtensor.phy.queensu.ca/maple2.html	page contains Maple links, with links to Maple Share Library archives but many links no longer work	1/1/2015
6	http://eaton.math.rpi.edu/CourseMaterials/Spring14/DiffEqHomePage2400Sp14.html	Differential Equations Maple Worksheets, RPI.edu math dept.	1/1/2015
7	http://www.indiana.edu/~statmath/math/maple/plotting/	lots of maple plotting commands, nice examples	1/1/2000
8	http://www.cs.laurentian.ca/sawyer/COSC2976E/	COSC 2976 E Mathematical Computation using Maple, "An extensive introduction to the Maple symbolic computation language is given"	1/1/2015
9	https://www.ma.utexas.edu/documentation/seminar/Spring95/maple-intro/maple-intro.html	Introduction to Maple, at math dept, U Texas, Austin.	1/1/2015
10	http://www.k-online.com/~joer/	emacs mode for maple, and some other packages.	1/1/2000
11	https://math.la.asu.edu/~kawski/classes/mat494s04/04pre.html https://math.la.asu.edu/~kawski/classes/mat494s98/494home.html	Course uses Maple arizona state univ. MAT 494	1/1/2000
12	http://www.math.rutgers.edu/courses/251/	Rutgres, multivariable calculus, uses Maple	1/1/2000
13	http://history.siam.org/pdfs2/Gonnet_final.pdf	Maple history	2/25/09
14	http://people.math.gatech.edu/~herod/	complete book on Maple. Linear Algebra. Uses linalg. See item 8	5/25/2007
15	http://www.maths.uq.edu.au/~mrb/tutors/mapleprog.html	good intro to maple programming	5/25/2007
16	http://www.math.usf.edu/~eclark/symcomp_spring_2002.html	contains course on maple and worksheets.	oct 28, 2004
17	http://www.math.gatech.edu/~bourbaki/math1711/html/maple.html	contains Maple worksheets for linear algebra among others	2/17/2007
18	http://eaton.math.rpi.edu/CourseMaterials/DiffEqs/	differential equations with maple	dec 9, 2005
19	http://www.math.utsa.edu/mirrors/maple/maplev.html	more maple packages and maple tutorials (crash course).	1/1/2000
20	http://mcs.open.ac.uk/dr9/	contains examples of maple for the book I bought called math methods in maple	1/1/2000
21	http://www.math.villanova.edu/archives/maple/	maple archive files	1/1/2000
22	ftp://ftp.maplesoft.on.ca/pub	contains share maple packages	1/1/2000
23	http://web.mit.edu/maple/www/home.html and Maple tech newsletter at MIT	maple at MIT (Maple tech old pages)	11/8/2012

24	http://www.math.utsa.edu/mirrors/maple/frame10.htm	universities using maple.	1/1/2000
25	http://fizjlk.fic.uni.lodz.pl/rut/Maple_r.htm	good page with lots of maple tutorial links.	1/1/2000
26	http://www.math.unl.edu/~sdunbar/	lots of maple and other math links.	1/1/2000
27	http://grtensor.phy.queensu.ca/	maple tensor package	1/1/2000
28	http://lie.uwaterloo.ca/dna.htm	MAPLE projects. Fast numerical ODE solutions.	1/1/2000
29	http://www-math.math.rwth-aachen.de/MapleAnswers/	Maple answers.	1/1/2000
30	http://www.math.ubc.ca/~israel/advisor/advisor.html	maple advisor pages	1/1/2000
31	http://www.physics.ubc.ca/~birger/n312l20a1.html	FFT in maple	1/1/2000
32	http://www.maplesoft.com/support/Faqs/index.shtml	Maple FAQ	1/1/2000
33	http://www.indiana.edu/~statmath/math/maple/	good intro on maple	1/1/2000
34	http://www-math.math.rwth-aachen.de/MapleAnswers/index.html	MUG , maple user groups. Lots of usefull FAQ in here. site is gone!	3/20/04
35	http://webpages.shepherd.edu/amihailo/	Maple expert web page, lots of MAPLE stuff	1/1/2000
36	http://lie.uwaterloo.ca/ecterrab/software.htm	packages for maple. ODE stuff.	1/1/2000
37	http://www.maple4students.com/	maple webpage. For students packages and help. Docuemntation here.	1/1/2000
38	http://www.physics.ohio-state.edu/~physedu/mapletutorial/tut_indx.html	physics with maple tutorial.	1/1/2000
39	http://web.mit.edu/afs/athena.mit.edu/software/maple/www/home.html	maple at MIT	1/1/2000
40	http://www.scs.ryerson.ca	MTH 207 Labs Maple Data Types. SIte that shows Maple data types.	1/1/2016
41	http://www.maplesoft.com/documentation_center/	Maple Manuals	
42	http://users.df.uba.ar/jakubi/maple.html	Large collection of Maple links, and link to Maple share library archives HTML	3/20/04
43	http://www.math.tamu.edu/~yasskin/maplets/learn/	”Learning to Write Maplets Philip B. Yasskin Department of Mathematics Texas A&M University ”	
44	http://www.aladjev.narod.ru/	Maple in Russia, Maple books	
45	http://www.maplesoft.com/products/maple/features/physicsresearch.aspx	Maple Physics site	

46	http://www.rose-hulman.edu/Users/groups/packets/HTML/Workshop97/Resources.htm	Maple resources list	
47	http://www.maths.dur.ac.uk/users/kasper.peeters/intro_computer_algebra.html	UK course on computer algebra, lots of Maple stuff	July 22, 2015
48	https://ece.uwaterloo.ca/~dwharder/NumericalAnalysis/14IVPs/higher/maple.html	Examples that shows how to solve higher order IVP ode's in Maple	
49	http://www.ms.uky.edu/~carl/Maple_Handbook/Maple_Handbook.pdf	PDF file, maple handbook for calculus students, by Carl Eberhart, Professor	
50	http://maple.bug-list.org/	maple bug list site	
51	http://ftp.math.utah.edu/pub/tex/bib/toc/maple-tech.html	Table of contents for issues of Maple Newsletter	
52	http://www.peterstone.name/Maplepgs/maple_index.html	Peter Stone's Home page Maple page with worksheets	
53	https://www.youtube.com/user/MaplesoftVideo/videos?view=0	Maple youtube page. Maple Videos	
54	https://www.maplesoft.com/products/maple/Mapleplayer/	"The Maple Player is a free application that lets you view and even interact with Maple documents to solve problems, visualize solutions, and explore concepts, even if you don't have Maple"	
55	http://www.math.unb.ca/~seahra/4503/maple_2011.html	Maple code, S. Seahra, Math 4503, unb.edu	Oct 2016
56	http://area51.stackexchange.com/proposals/107315/maple	Maple proporsal for stackexchange	3/2017
57	http://www.math.rutgers.edu/academics/undergraduate/266-course-materials/244/1250-maple-in-math-244	Maple use in Math 244 at .math.rutgers.edu, some Maple files	
58	http://www.maplesoft.com/products/maple/new_features/Maple2017/PartialDifferentialEquations.pdf	Examples using pdsolve for pde's in Maple 2017	may 2017
59	http://www.maplesoft.com/products/maple/new_features/	Maple 2017 new features	May 2017
60	http://perso.ens-lyon.fr/bruno.salvy/software/the-gfun-package/	gfun package for Maple. Bruno Salvy's Web Site. "Gfun is a Maple package that provides tools for guessing a sequence or a series from its first terms; manipulating rigorously solutions of linear differential or recurrence equations, using the equation as a data-structure."	Oct 2017
61	https://www.maplesoft.com/products/maple/new_features/	web page for new features of Maple releases	March 2018
62	http://shell.cas.usf.edu/~wclark/maple_links.html	Site than contain Maple links. many links are broken though, old	May 2018

63	https://www.maplesoft.com/products/maple/history/	Maple Maple Product History	May 2020
64	https://www.researchgate.net/project/MapleTech	MapleTech newsletter list/History	August 2020
65	http://shell.cas.usf.edu/~wclark/maple_links_experts.html	Homepages of a few people with special interest and expertise in Maple	August 2020
66	https://cs.uwaterloo.ca/research/tr/1984/CS-84-35.pdf	Research report PDF by Carolyn J. Smith. Kovacic's algorithm for ODE. Maple implementation	Nov 5,2020
67	https://www.maplesoft.com/mapleconference/	Maple Conference webpage. Has Videos. and has link to 2019 maple conference	Nov 5,2020
68	https://www.maplesoft.com/products/maple/new_features/maple_plots.aspx	Maple Plot Index. Gives overview of Maple plots	Nov 5,2020
69	https://www.maplesoft.com/support/help/maple/view.aspx?path=dsolveTextbooksandPapersRelatedtoMethodsforODEsUsedindsolve		
70	https://www.maplesoft.com/support/help/maple/view.aspx?path=dsolvePagesRelatedtoAlgorithmsUsedbydsolveforExactSolutionsofODEs		

9.3 Mathematica

1	http://twitter.com/MathematicaTip	mathematica tips on twitter	1/1/2010
2	http://www.mathstatica.com/software/	statistics software for mathematica. Not free	1/1/2010
3	http://physuna.phs.uc.edu/~johnson/EM/mathematica.index.html	The following are Mathematica notebooks which illustrate points made in a first year graduate course in Electrodynamics. The course uses Jackson's Electrodynamics as a text but introduces additional material. In particular, the first quarter's coverage of conformal mappings and finite element analysis are outside of Jackson	4/10/04
4	http://www.ifm.mavt.ethz.ch/~kaufmann/packages/me/beam-info.html	mechanical beam analysis for mma. Downloaded and installed software	1/1/2010
5	http://www.ph.hunter.cuny.edu/courses/Physics111Math/math4.htm	physics mma notebooks cuny.edu	1/1/2010
6	http://www.ma.iup.edu/projects/CalcDEMma/advmath.html http://www.ma.iup.edu/projects/	advanced mathematics notebooks from IUP.edu	Nov 7, 2004.

7	http://pruffle.mit.edu/3.016/Mathematica/Lecture-18/	lecture notes showing how to use mathematica for image processing mit.edu	Nov 7, 2004.
8	http://mathworld.wolfram.com/packages/	packages from mathworld	1,1,2010.
9	http://www.physics.umd.edu/courses/CourseWare/EssentialMathematica/	Tutorial Approach to Mastery of Mathematica Has example how to make package. Usefull stuff to learn from. By James Kelly	oct 15, 2004
10	http://www.physics.umd.edu/courses/CourseWare/StatisticalPhysics/	UMD.edu, physics course using M also by James Kelly	May 27, 2007
11	http://eclecticdreams.net/DrBob/copy_as_inputform.htm	allows one to copy mma expressions from notebook as text without mangling. Other mma tools.	oct 12, 2004
12	http://www.ece.utexas.edu/~bevans/projects/symbolic/pack.html	mma package for signal processing.	
13	http://galeb.etf.bg.ac.yu/~lutovac/contents.htm	Filter design using matlab and mma. Contains mma package that comes with the book	oct 2004
14	http://www.ima.umn.edu/~mjohnson/mae305/mathematica.html	MAE 305,Mathematica Tutorial. has notes on solving ode using power series in Mathematica	1/16/2015
15	http://amath.colorado.edu/computing/Mathematica/Notebooks/	mma tutorials at Coloardo EDU	
16	http://www.csit.fsu.edu/~burkardt/papers/mathematica_graphics_2d.html	good reference to mma plot commands	
17	https://www.utexas.edu/its/rc/tutorials/mathematica/graphics/2-DGraphics.html	fundamentals of mma graphics	
18	http://www.nd.edu/~mjm/mma.cheg355.html	course notes on fluid, with lots of mma packages	Oct 10, 2004.
19	http://peabody.sapp.org/class/350.867/lab/mma/spectrum/	Peabody Conservatory, Spectrum by Similarity, has mma package in DSP	1/1/2015
20	http://library.wolfram.com/howtos/images/	shows how to do basic image processing in mma.	1/1/2015
21	http://documents.wolfram.com/flash/	Contains animated mathematics functions in flash.	
22	http://www.che.boun.edu.tr/~che/akman/che555/mat555.html	course notes that uses mma. This page contains examples on how to solve the Initial Value Problems (IVPs) and Boundary Value Problems (BVPs) using numeric and symbolic solvers in MATHEMATICA.	
23	http://physics.uwa.edu.au/Physics/Courses/Third_Year/Computational_Physics.html	computational physics course, Australia univ. uses mma.	
24	TheMathematicaBook/PrinciplesOfMathematica/TheStructureOfGraphicsAndSound/2.10.3.html	mma web site for graphics directives..	

25	http://www.ericweisstein.com/encyclopedias/books/Mathematica.html	listing of mma books.	
26	http://library.wolfram.com/infocenter	mma information center at mma web site.	
27	http://www.phy.duke.edu/~palmer/notebooks/mmindex.html	mma notebooks on mathematical methods for physics.	
28	http://home.earthlink.net/~djmp/Mathematica.html	David Park mma web site. Contains some packages on conics and tensors	
29	http://phong.informatik.uni-leipzig.de/~kuska/mathgl3dv3/index.htm	mathGL web site. Allows one to rotate 3D images	
30	http://www.math.ou.edu/~amiller/math/plot.htm	easily explains mma plot command.	
31	http://www.ses.swin.edu.au/homes/browne/programmingforengineers/coursenotes/index.htm	programming for engineering course notes. Uses mma. It talks about how to package the mma application.	
32	http://library.wolfram.com/howtos/diffeq	mma own page on how to solve DE both symbolic and numerically	
33	http://www.math.ou.edu/~amiller/3113/dsolve/dsolve.htm	another page on how to use DSolve	
34	http://ieee.ntua.gr/both/math_files/Survival_Guide_for_MMA_programmers.html	survival guide for mma programmers.	
35	http://www.mathematica-journal.com	mma journal web site	
36	http://math.fullerton.edu/mathews/index.html	Dr Mathews, at CSU fullerton, lots of mma notebooks on complex analysis	12/26/03.
37	http://www.ses.swin.edu.au/homes/browne/programmingforengineers/	contains good mma notes and programming tips	12/23/03
38	http://www.math.ou.edu/~mcknight/5793/MathematicaNotebooks/notebookindex.html	lots of mma notebooks related to using matrices	
39	http://darkwing.uoregon.edu/~phys600/	comp physics course in MMA	
40	http://www.physics.uwa.edu.au/~paul/publications.html	home page with lots of mma stuff. UWA edu	
41	http://web.usna.navy.mil/~rmm/	many on-line mma programs to view with HTML	
42	http://www.math.pku.edu.cn/stu/eresource/wsxy/sxrj/c/mathematica/math_pagelast.html	MMA resources and tutorials	
43	http://www-cm.math.uiuc.edu/	Calculus and mathematica course at University of Illinois at Urbana-Champaign. A whole courses that uses MMA only.	

44	where-can-i-find-examples-of-good-mathematica-programming-practice	large links page at Mathematica stackexchange	1/1/2014
45	https://pantherfile.uwm.edu/sorbello/www/classes/mathematica_commands.html	has summary of commands	1/1/2010
46	http://www-irm.mathematik.hu-berlin.de/~sulanke/sulanke-MuM.html	link to some one page, with lots of notebooks, advanced geometry	1/1/2010
47	http://pages.uoregon.edu/noeckel/MathematicaGraphics.html#GraphicsAnnotation	page on creating and processing graphics in mathematica	1/1/2010
48	http://www.descarta2d.com/	geometry with mathematica	1/1/2010
49	http://www.wolfram.com/products/mathematica/analysis/content/NumericalMatrixSystems.html	web page for numerical/matrix in mathematica	1/1/2010
50	http://www.wolfram.com/faculty/	wolfram.com faculty	1/1/2010
51	http://reference.wolfram.com/language/tutorial/SomeNotesOnInternalImplementation.html	on internal implementation for mathematica	11/2/10
52	http://reference.wolfram.com/mathematica/tutorial/WhyYouDoNotUsuallyNeedToKnowAboutInternals.html	Mathematica why you do not really need about internals	11/2/10
53	http://reference.wolfram.com/mathematica/tutorial/TheInternalsOfMathematicaOverview.html	internals of mathematica	11/2/10
54	http://www.nd.edu/~mjm/diff.eigen.pdf	How to solve eigenvalue operator problem in Mathematica	10/25/10
55	http://library.wolfram.com/conferences/devconf99/#programming	Wolfram 99 conference	10/22/10
56	http://wnsl.physics.yale.edu/levelscheme/CustomTicksGuide.pdf	custom ticks package	10/23/10
57	http://wnsl.physics.yale.edu/levelscheme/	publication quality figures with mathematica	1/1/2010
58	http://web.ift.uib.no/~szhorvat/mmatricks.php	Szhorvat mathematica site. key binding, shows how to print matrix in matixForm automatically	1/1/2010
59	http://szhorvat.net/pelican/latex-typesetting-in-mathematica.html	Szhorvat Matex package.	
60	http://www.verbeia.com/mathematica/tips/Tricks.html	Verbeia mma web site. has mma tricks	7/23/2010
61	http://www.nhn.ou.edu/~morrison/Mathematica/index.shtml	mma web site, Dr Mosrrison.	1/1/2010

62	http://www.nhn.ou.edu/~morrison/Mathematica/index.shtml	physics and mathematica	1/1/2000
63	http://math.bu.edu/people/bob/MA471/mathematica.html	mathematica math functions at BU web site	1/1/2000
64	http://reference.wolfram.com/alphaindex/A.html http://reference.wolfram.com/mathematica/guide/AlphabeticalListing.html	listing of all things in mathematica, listing of all functions in mathematica	1/1/2000
65	http://www.central.edu/eaam/	web site for using Mathematica for abstract algebra	1/1/2000
66	https://pantherfile.uwm.edu/sorbello/www/classes/mathematica_commands.html	mathematica commands and examples	oct 30,2009
67	http://www.wolframscience.com/summerschool/materials/	contains old Mathematica study material from NKS summer schools. Have open problems also.	3/21/07
68	http://www.austincc.edu/mmcguff/mathematica/index.html	notes on Mathematica. Has stuff on vectorAnalysis	11/1/06
69	http://www.intek.de/simulation/mathematica/IMSweb/imsTOC/Lectures/	contains Mathematica based on line book on computer science called "structure and interpretation of computer programs" and notes on PDE.	8/17/05
70	http://www.wolfram.com/news/tsn/	mma news letters	1/1/00
71	http://support.wolfram.com/kb/topic/mathematica	support articles at WRI site	1/1/2000
72	http://engineering.utsa.edu/~foster/ME4603/	FEM course using Mathematica. Has videos and notebooks.	3/5/2013
73	http://ftp.gwdg.de/pub/math/mathematica/math-source/	Math source repository	3/5/2013
74	<ol style="list-style-type: none"> 1. http://usm.maine.edu/engineering/egn-181 2. http://usm.maine.edu/engineering/ele-216 3. http://usm.maine.edu/engineering/ele-486 4. http://usm.maine.edu/engineering/ele-489 	University of Southern Maine has some Mathematica based courses	1/1/2000
75	http://ckw.phys.ncku.edu.tw/public/pub/Notes/	Large with many M packages but also many other physics stuff	12/27/2012
76	http://mathematicacookbook.com/	mathematica cookbook site	1/1/2000
77	http://www.wolfram.com/events/technology-conference/2011/presentations.html	2011 technology confrence presentations	1/15/2011
78	http://carmine.se.edu/kfrinkle/PrinciplesOfLinearAlgebraWithMathematica/index.html	Code sections from new book linear algebra with mathematica	9/21/2011

79	http://www.quora.com/Mathematica	mathematica forum at Quora site	1/1/2010
80	http://www.math.umn.edu/~olver/math.html	contain number of mathematica small program in applied math. PDE solutions	august 12,2005.
81	http://sdphca.ucsd.edu/105a/105a.html	computational physics courses using Mathematica	august 11,2005
82	http://sdphca.ucsd.edu/105b/105b.html	another course after the above, comp physics using mma.	august 11,2005
83	http://www.ma.utexas.edu/CNA/NMC5/nmc5-mathematica.html	cool site for a book, contains good examples for PDE and other numerical stuff	august 11,2005
84	http://www.mathematicaguidebooks.org	home page for mathematica guide books	nov 21, 2004
85	http://groups.engin.umd.umich.edu/CIS/course.des/cis400/math/mathematica.html	"The Mathematica Programming Language" Notes on Mathematica and its history at umich.edu	
86	http://web.csulb.edu/~htahsiri/studyguide/Mathematica/mathematica.html	H. Tahsiri, Physics Department CSULB, Mathematica programming notes.	
87	http://webmathematica.usd.edu/webMathematica/BrowseExamples/index.html	Wolfram webmathematica examples, but it does not seem to be working when I tried it.	
88	http://portal.hs-weingarten.de/web/kragler/mathematica	Dr Kragler Mathematica site, symbolic solutions of some classes of linear but inhomogeneous PDEs and ODEs	July 15, 2015
89	http://packagedata.net/	Contain links to Mathematica packages such as CellsToTeX, MaTeX, RUBI and many others	9/24/2015
90	http://infoscience.epfl.ch/record/203756/	Tutorial: Sub-Nyquist artifacts and sampling moire effects, by Amidror, Isaac, with Mathematica packages and CDF files to download	10/24/2015
91	https://lab.open.wolframcloud.com/objects/wpl/GetStarted.nb	open lab. Place to try Mathematica online. Free	
92	https://github.com/rsmenon/pygments-mathematica	Mathematica/Wolfram Language lexer and highlighter for Pygments	
93	https://web.archive.org/web/20150906015747/http://www.wolfram.com/learningcenter/tutorialcollection/	Link to old Mathematica tutorial collection in PDF which is no longer online	
94	https://www.wolframcloud.com/objects/b3m2a1.docs/reference/GeneralUtilities/guide/GeneralUtilities.html	online docs for general utilities	sept 6, 2017
95	https://develop.open.wolframcloud.com/app/objects/e9a1b03c-d3bf-4c9a-bcb5-04c7a60b75f9	11.2 on the cloud	

96	http://reference.wolfram.com/language/DatabaseLink/tutorial/DatabaseReference.html	help pages on how to make SQL database using Mathematica, what type of databases it supports, and http://reference.wolfram.com/language/DatabaseLink/tutorial/Overview.html has docs on how to make operations on the database. And https://www.w3schools.com/sql/sql_create_table.asp is tutorial on SQL	
97	https://resources.wolframcloud.com/FunctionRepository	The Wolfram Function Repository is a public resource that hosts an expanding collection of contributed standalone functions suitable for immediate use in any Wolfram Language computation	March 2021
98	http://develop.open.wolframcloud.com/app/view/newNotebook?ext=nb	Free online Mathematica	Oct 2017

9.4 Fricas

1	https://fricas.github.io/index.html	FriCAS home page	
2	https://groups.google.com/forum/#!forum/fricas-devel	FriCAS usenet google group	3/30/2016
3	https://fricas.github.io/book.pdf	Fricas online book	
4	http://fricas-wiki.math.uni-wroc.pl/SandBox	Online Fricas integration. Go to bottom of page, type the integrate command Then click the preview button	

9.5 Maxima

1	sourceforge.net/p/maxima/bugs/	Reort Maxima bugs	July 2018
2	https://sourceforge.net/p/maxima/mailman/	links to mailings list, bug database and such	April 2018
3	http://maxima.sourceforge.net/documentation.html	documenation	
4	http://maxima.sourceforge.net/faq.html	Maxima FAQ	
5	https://sourceforge.net/projects/wxmaxima/forums/	maxima forum	7/25/2012
6	https://sourceforge.net/p/maxima/mailman/maxima-discuss/	archive of Maxima mailing lists, sourceforge	
7	http://www-com.physik.huberlin.de/~bunk/kurs/maxima/maxima.html	for basic Maxima commands help	
8	http://area51.stackexchange.com/proposals/102157/maxima#	Maxima proposal for stackexchange forum	

9	http://maxima.sourceforge.net/ui-tips.html	Usefull Maxima tips	
10	http://www.hippasus.com/resources/symmath/maximasym.html	Maxima cheat sheet	
11	http://web.csulb.edu/~woollett/	Maxima by Example by Edwin L. (Ted) Woollett, CSULB, physics dept.	
12	https://www.math.utah.edu/faq/maxima/	Maxima FAQ at UTAH university	
13	http://maxima.sourceforge.net/docs/manual/intromax.html	Basic intro to maxima	July 2018
14	https://themaximalist.org	A site for people who use Maxima to do Mathematics	June 2020

9.6 Axiom (docs also for Fracas)

1	http://www.axiom-developer.org/axiom-website/documentation.html	on line AXIOM book	Jan 2018
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9.7 Rubi

1	https://gitter.im/Rule-Based-Integration	Rubi's Gitter. Forum for Rubi	March, 2021
2	https://rulebasedintegration.org/	Rubi's Main site	March, 2021
3	https://github.com/RuleBasedIntegration/Rubi/releases	Rubi's Github site, where to download from	March, 2021
4	https://www.12000.org/my_notes/CAS_integration_tests/index.htm	Computer Algebra Independent Integration Tests, uses Rubi's test suite input	March, 2021

9.8 Sympy

1	https://github.com/sympy/sympy/pull/12978/commits/3314bdfc0517441849b298c3f94c78417987b760	For information about using Rubi rules inside sympy	Nov 24, 2017
2	https://groups.google.com/forum/#!forum/sympy	usenet group for sympy	July 2018

9.9 SageMath

1	https://trac.sagemath.org/query?status=!closed&reporter=gh-nasser1	bugs entered by me	July 2018
2	http://www.sagemath.org/	Sagemath Home	July 2018
3	http://www.sagemath.org/links-components.html	SageMath components	July 2018

9.10 Giac/XCAS

1	https://www-fourier.ujf-grenoble.fr/~parisse/xcasen.html	online page to use xcas	July 2018
2	https://www-fourier.ujf-grenoble.fr/~parisse/giac.html	Main site	July 2018

9.11 Java/Symja

1	https://github.com/axkr/symja_android_library	Symja - computer algebra language and symbolic math library for Android NCalc calculator. A collection of popular algorithms implemented in pure Java.	March 2021
2	http://matheclipse.org/	Main site for using sympja online	March 2021

9.12 Julia

1	https://juliasymbolics.org/	"JuliaSymbolics is the Julia organization dedicated to building a fully-featured and high performance Computer Algebra System (CAS) for the Julia programming language."	March 2021
2	https://symbolics.juliasymbolics.org/dev/	docs for juliasymbolics	March 2021
3	https://www.youtube.com/watch?v=bGYSae90hA0	youtube, JuliaCon 2019 , Symbolic Manipulation in Julia, Harrison Grodin	March 2021
4	https://discourse.julialang.org/t/ann-symbolics-jl-a-modern-computer-algebra-system-for-a-modern-language/56251	announcement of JuliaSymbolics and discussions	March 2021
5	https://www.youtube.com/watch?v=M742_73edLA	youtube, JuliaCon 20189 Symbolic Mathematics in Julia , John Lapyre. History of CAS	March 2021
6	https://news.ycombinator.com/item?id=26356854	ycombinator thread on JuliaSymbolics announcement	March 2021
7	https://symbolics.juliasymbolics.org/dev/tutorials/symbolic_functions/	Tutorial on using basic juliasymbolics	March 2021
8	https://cheatsheets.quantecon.org/	MATLAB–Python–Julia cheatsheet. shows syntax for common operations	March 2021

9.13 oscar CAS

1	https://oscar.computeralgebra.de/	"The OSCAR project develops a comprehensive open source computer algebra system for computations in algebra, geometry, and number theory."	March 2021
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9.14 desmos calculator

1	https://www.desmos.com/calculator	”Desmos is an advanced graphing calculator implemented as a web application and a mobile application written in JavaScript. It was founded by Eli Luberoff, a math and physics double major from Yale University, and was launched as a startup at TechCrunch’s Disrupt New York conference in 2011.”	March 2021
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9.15 Lie symmetry in solving ODE’s. Using symmetry methods to solve ODE’s and PDE’s

1	https://www.amazon.com/gp/product/0915692139/ref=dbs_a_def_rwt_hsch_vapi_taft_p1_i0	Amazon’s page for Sophus Lie’s 1884 Differential Invariant Paper, English translation. Could not find online version of this.	August 2020
2	https://en.wikipedia.org/wiki/Lie_point_symmetry	Wikipedia page, has links to original work in the subject. see references 5 to 9 at end of page	August 2020
3	https://fr.maplesoft.com/support/help/Maple/view.aspx?path=odeadvisor/linear_sym	Maple’s web page on the subject.	August 2020
4	https://arxiv.org/abs/math-ph/0007023	Paper First-order Ordinary Differential Equations, Symmetries and Linear Transformations. by E. S. CHEB-TERRAB and T. KOLOKOLNIKOV	August 2020
5	https://cs.uwaterloo.ca/research/tr/1998/11/CS-98-11.pdf	Paper. symmetries and first order ODE patterns. By E.S. Cheb-Terrab and Roche. 1998. Good paper that shows how to find the pairs of functions for symmetry for first order ODE. Start with this one.	August 2020
6	https://www.kent.ac.uk/smsas/personal/ph282/papers/LedniceSummerSchool14Lect1handout.pdf	Class handouts, From symmetries to solutions Symmetry Methods for Differential and Difference Equations. By Peter Hydon University of Kent. Easier to study from than other links	August 2020
7	https://ocw.mit.edu/courses/mathematics/18-755-introduction-to-lie-groups-fall-2004/readings/helga_sopmath3_2.pdf	Paper on Sophus Lie, goes over group theory needed	August 2020
8	https://www.intlpress.com/site/pub/files/_fulltext/journals/iccm/2015/0003/0001/ICCM-2015-0003-0001-a009.pdf	Review of Sophus Lie work	August 2020
9	https://www.amazon.com/Practical-Invariant-Monographs-Computational-Mathematics-ebook/dp/B01DM26PBO	Book, A Practical Guide to the Invariant Calculus.	August 2020

10	https://pdfs.semanticscholar.org/783a/acef120278177bb1bf8ff3576a3c5562c4 .pdf	pdf file. Conditional Symmetry Properties for Ordinary Differential Equations by Aeeman Fatima. PhD thesis	August 2020
11	https://library.wolfram.com/infocenter/Books/3799/	Book Symmetry Analysis of Differential Equations using Mathematica	August 2020
12	https://arxiv.org/pdf/1901.01543.pdf	Paper. Lie symmetry group methods for differential equations by F.Gun-gor.	August 2020
13	https://arxiv.org/pdf/1409.8364.pdf	Paper. practical guide to the symbolic computation of symmetries of differential equations. by Stanly Steinberg	August 2020
14	https://www.researchgate.net/publication/233653257_Solving_Differential_Equations_by_Symmetry_Groups	Paper. Solving Differential Equations by Symmetry Groups. by John Starrett. Easy to follow paper showing how to use Lie symmetry for first order ODE	August 2020
15	https://www.youtube.com/watch?v=dNLMvhZWEq8	you tube. Showing how to solve PDE by symmetry. by Chris Tisdell	August 2020
16	https://www.youtube.com/watch?v=Q-Ib7t_fFgo	you tube. Shows at 12:38 common examples of Lie symmetry for ODE to use. Shift, Dilation, rotation, shear and projection. But video do not have full worked out example. by Dmitry A. Lyakhov	August 2020
17	https://www.youtube.com/watch?v=3Y0300CWczQ	PDEs 10 29 Lie Groups Introduction video	August 2020
18	https://www.youtube.com/watch?v=87zQEwSM5EU	Symmetry Methods for Differential Equations-II,Lecture-9 by Farhad Ali	August 2020
19	https://www.youtube.com/watch?v=cx84pc6AetA&list=PL-edc4nsbneWh7jj9uwV_QIA16swTQ2GZ&index=1	Ibragimov Lectures. But Audio is not clear at all, so not very useful.	August 2020
20	https://www.math.ubc.ca/~bluman/	George Bluman web page at UBC. Contains PDF papers on Lie group symmetry for ode's and pde's	August 24, 2020
21	https://web.stanford.edu/~cantwell/SymmetryAnalysisSoftware/	Symmetry Analysis Software. Package. Mathematica by Brian Cantwell.	August 24, 2020
22	https://www.amazon.com/Introduction-Symmetry-Analysis-Cambridge-Mathematics/dp/0521771838	Amazon link to book Introduction to Symmetry Analysis by Brian Cantwell.	August 24, 2020
23	https://jscholarship.library.jhu.edu/bitstream/handle/1774.2/34870/31151000912281.pdf	PDF book, AN INTRODUCTION TO THE LIE THEORY OF ONE-PARAMETER GROUPS with applications TO THE SOLUTION OF DIFFERENTIAL EQUATIONS. ABRAHAM COHEN, 1911	August 24, 2020

24	https://isidore.co/calibre/get/pdf/6103	PDF book, Symmetry Methods for Differential Equations, A Beginner's Guide. By PETER E. HYDON. Another link is https://www.cambridge.org/core/books/symmetry-methods-for-differential-equations/805DEEB7D5D0D2040A3A8444B1C8A33E	August 24, 2020
25	https://www.kent.ac.uk/smsas/personal/ph282/index.htm	Home page of PETER E. HYDON, author of book Symmetry Methods for Differential Equations, A Beginner's Guide	Sept 4, 2020
26	https://www.kent.ac.uk/smsas/personal/ph282/papers/LedniceSummerSchool14Lect2handout.pdf	PDF, lecture notes: How to find Lie symmetries by PETER E. HYDON	Sept 4, 2020
27	https://www.mdpi.com/2073-8994/2/2/658	Lie Symmetries of Differential Equations: Classical Results and Recent Contributions by Francesco Oliveri	August 24, 2020
28	https://mathematica.stackexchange.com/questions/20438/symmetry-finding-packages	question about mathematica packages for finding symmetries for ode's.	August 24, 2020
29	https://www.youtube.com/watch?v=MApjCNK_Nrk&list=PLTv49LHYItznZIFPdbAWmBREYK29c_mg-	Youtube, Simple groups, Lie groups, and the search for symmetry I, Math History, NJ Wildberger.	August 24, 2020
30	https://www.youtube.com/watch?v=mH0oCDa74tE	Youtube, Group theory and why I love by 3Blue1Brown	August 24, 2020 808,017,424,794,512,875,886,459,904,961,710,757,005,754,368,
31	https://www.youtube.com/watch?v=UC3b3cJd57E	Youtube, Partial differential equations: Lagrange, Cauchy, Lie, by Stefan Hildebrandt. Has good review of history of solving first order PDE and references to historical papers. Goes over Lagrange's 1772 paper.	August 24, 2020
32	https://www.youtube.com/watch?v=kTCdGek-E_g	Youtube, shows how to use similarity method to solve diffusion PDE over the whole real line. Finding invariant transformation. Can be also done using Green function method. by quantpie	August 24, 2020
33	http://www.physics.drexel.edu/~bob/LieGroups/LG_16.pdf	PDF. Lie Groups and Differential Equations, by Robert Gilmore	August 24, 2020
34	https://www.math.arizona.edu/files/grad/workshops/integration/projects/GroupTheoreticalTechniques.pdf	PDF. Group Theoretical Techniques in Differential Equations by Yaron Hadad	August 29, 2020
35	https://www.amazon.com/Similarity-Solutions-Nonlinear-Differential-Mathematics/dp/0273086219	Book, Similarity Solutions of Nonlinear Partial Differential Equations by Lawrence Dresner	August 29, 2020
36	https://arxiv.org/pdf/1003.3202.pdf	PDF. "Theory of Transformation Groups by Sophus Lie and Friedrich Engel (Vol. I, 1888)". English translation by Joël Merker.	August 29, 2020

37	https://openworks.wooster.edu/cgi/viewcontent.cgi?article=1948&context=independentstudy	Good article on Lie symmetry. "The Truth About Lie Symmetries: Solving Differential Equations With Symmetry Methods" By Ruth A. Steinhour	Sept 6, 2020
38	https://elibrary.ru/item.asp?id=7322042	B. Char, "Algorithms using lie transformation groups to solve first order ordinary differential equations algorithmically", Ph.D. Thesis, University of California, Berkeley, 1980.	December 29, 2020

9.16 Differential Geometry

1	https://www.youtube.com/watch?v=4fBOVfKZRXM	Youtube, Introduction to Differential Geometry 1: Curves, Faculty of Khan	August 24, 2020
2	https://www.youtube.com/watch?v=am5MIduPkKQ	Youtube, Arc Length and Reparameterization, Differential Geometry 2, Faculty of Khan	August 24, 2020
3	https://www.youtube.com/watch?v=f8ACx2iN6fk	Youtube, The Geodesic Problem on a Plane , Calculus of Variations, Faculty of Khan	August 24, 2020

9.17 General computer algebra

1	https://www.12000.org/my_notes/kovacic_algorithm/index.htm	Collection of papers related to Kovacic algorithm for solving differential equations	March 5, 2021
2	http://math.unm.edu/~wester/cas_review.html	A Critique of the Mathematical Abilities of CA Systems, by M. Wester	1/1/2000
3	http://krum.rz.uni-mannheim.de/cafgbench.html	Computer Algebra Benchmarks	1/1/2000
4	http://beige.ucs.indiana.edu/P573/node35.html	Small table shows commands in Maple, Mathematica and Maxima side by side	
5	http://www.inf.ethz.ch/personal/bernardi/solve/	A Review of Symbolic Solvers, by L. Bernardin	
6	http://www-troja.fjfi.cvut.cz/~liska/ca/	COMPUTER ALGEBRA, Algorithms, Systems and Applications Richard Liska, Ladislav Drska, Jiri Limpouch, Milan Sinor, Michael Wester, Franz Winkler	1/14/2014
7	http://lie.uwaterloo.ca/odetools/comparison.html	contains comparing ODE solver in MMA and Maple. For solving kamke book ODE's, also contains files to download which contains the actual ODE's	6/5/2003
8	http://www.cecm.sfu.ca/CAG/	computer algebra group	1/1/2000
9	https://sites.google.com/site/fjwcentaur/mathalgs/	PDF on lecture on CAS	1/1/2000
10	https://sites.google.com/site/fjwcentaur/brazil-lectures	Brazil lecture on CAS	1/1/2000

11	https://sites.google.com/site/fjwcentaur/brazil-lectures/mathmethods	Mathematical Methods for Physics using Maple	1/1/2000
12	http://www.apmaths.uwo.ca/~arich/	Rubi Mathematica package for indefinite integration	1/1/2014
13	http://axiom-wiki.newsynthesis.org/RosettaStone?root=FrontPage	compares commands in different CAS systems	1/1/2000
14	http://cs.nyu.edu/~yap/book/alge/ftpSitee	online book C.K. Yap "Fundamental problems of algorithmic algebra"	8/8/2006
15	http://www.abc.se/~m9847/matre/comal.html	links to computer algebra	1/1/2000
16	http://liinwww.ira.uka.de/bibliography/Math	good bibliography	1/1/2000
17	http://www.cs.berkeley.edu/~fateman/papers/mma.review.pdf	Review of Mathematica by Fateman from UC Berkeley	1/1/2000
18	http://http.cs.berkeley.edu/~fateman/papers/eval.pdf	paper by Dr Fateman on symbolic evaluators	dec 9,2005
19	http://www.mapleapps.com	maple applications	1/1/2000
20	http://web.csulb.edu/~woollett/	Edwin L. (Ted) Woollett CSULB tutorial on Maxima (and R)	6/15/2015
21	http://esd.mit.edu/Faculty_Pages/moses/Macsyma.pdf	paper on history of macsyma	11/28/2008
22	http://www.cis.udel.edu/~caviness/	Dr Caviness web page, contain nice paper of computer algebra	1/1/2000
23	http://www-sop.inria.fr/cafe/Manuel.Bronstein/bronstein-eng.html	Manuel Bronstein web page. Contains good notes on CAS	August 10, 2005
24	http://www.journals.elsevier.com/journal-of-symbolic-computation	Elsevier Journal of Symbolic Computation	
25	http://www.springerlink.com/content/100499	Elsevier Journal of applicable algebra in engineering	1/1/2014
26	http://www.sigsam.org/journals.phtml	ACM SIAM list of Computer Algebra Journals	1/1/2014
27	ftp://ftp.ccs.neu.edu/pub/sigsam/README.html	This is the SIGSAM archive	1/1/2015
28	http://boxen.math.washington.edu/home/wdj/teaching/DiffyQ/	free on-line book on using sage for DE	1/1/2014
29	http://www.sagenb.org/	try sage online	1/1/2014
30	http://interact.sagemath.org	Sage interact	1/1/2014
31	http://www.sagemath.org/help-groups.html	Sage news groups	1/1/2014
32	http://www.singacom.uva.es/ACA2015/	ACA 2015 Applications of Computer Algebra July 20-23, 2015, Kalamata, Greece	
33	http://axiom-wiki.newsynthesis.org/FriCASTutorial	FriCAS Tutorials. Most introductory material about Axiom applies to FriCAS"	6/1/2015
34	http://www.axiom-developer.org/	Axiom CAS web page	6/1/2015

35	http://www-sop.inria.fr/cafe/Manuel.Bronstein/pmint/	pmint - The Poor Man's Integrator "pmint is a very short (95 lines) Maple program for integrating transcendental elementary or special functions" Small Maple program By Manuel Bronstein	6/15/2015
36	http://faculty.fordham.edu/rlewis/aca2014/	2014 ACA (application of computer algebra) conference	
37	http://www.math.wpi.edu/IQP/BVCalcHist/index.html	The History of the Calculus and the Development of Computer Algebra Systems, Dan Ginsburg, Brian Groose, Josh Taylor, Prof. Bogdan Vernescu, Advisor	Nov 5, 2015
38	http://www.commalg.org/	"We are the center for commutative algebra – your resource for news and information of interest to the commutative algebra community" Has Upcoming Conferences in computer algebra area and others	
39	http://algebrite.org/	"Algebrite is a Javascript library for symbolic mathematics"	4/8/16
40	http://www.euclideanspace.com/prog/scratchpad/	Blog page about Computer Algebra Programs, Axiom, Fricas and SPAD (language for Axiom)	5/28/16
41	https://github.com/sagemath/sage/tree/master/src	Browse SAGE math source code	
42	http://nemocas.org/	Computer algebra package for Julia	
43	http://www.risc.jku.at/projects/adjoints/blowup/	RISC, project page, desing, A computer program for resolution of singularities. Maple package	8/11/16
44	http://www.axiom-developer.org/axiom-website/rosetta.html	" Rosetta Stone The following is a collection of synonyms for various operations in the computer algebra systems Axiom, Derive, GAP, DoCon, Macsyma, Magnus, Maxima, Maple, Mathematica, MuPAD, Octave, Pari, Reduce, Scilab, Sumit and Yacas"	8/16/16
45	http://axiom-wiki.newsynthesis.org/FrontPage	FriCAS wiki	8/16/16
46	https://github.com/daly/axiom/blob/master/faq	Axiom FAQ. Has useful stuff, can use in Fricas	8/16/16
47	http://www.issac-symposium.org/2015/index.html	International Symposium on Symbolic and Algebraic Computation (ISSAC) ISSAC 2015 will be the 40th meeting in the series. ISSAC 2015 was held on 6-9 July 2015 at The University of Bath, Bath, UK.	8/16/16
48	http://www.scl.csd.uwo.ca/	Symbolic Computation Laboratory The University of Western Ontario	12/2016
49	http://www.orcca.on.ca/	Ontario Research Centre for Computer Algebra University of Western Ontario University of Waterloo	12/2016

50	http://hyperpolyglot.org/computer-algebra2	has cheat sheet comparing syntax of number of CAS for common operations	March 2017
51	http://www.math.ubc.ca/~israel/challenge/challenge.html	Solutions to the SIAM 100-Dollar, 100-Digit Challenge, Maple. 2002 see also http://people.maths.ox.ac.uk/trefethen/hundred.html and https://who.rocq.inria.fr/Michel.Kern/Challenge/challenge.html	4/14/17
52	http://hyperpolyglot.org/computer-algebra	has computer algebra syntax for sympy and others side by side.	July 2017
53	http://www.stochasticlifestyle.com/comparison-differential-equation-solver-suites-matlab-r-julia-python-c-fortran/	Blog article comparing number of ODE solver (Maple, Julia, Mathematica, Matlab, etc..)	Sept 27, 2017
54	https://www.symbolab.com	shows step by step solution for integrals and derivative. GUI interface runs in a web page	Jan 2018
55	http://users.df.uba.ar/jakubi/comparison.html	old Links to "Comparison of Computer Algebra Systems"	July 2018
56	https://www.maplesoft.com/support/help/maple/view.aspx?path=dsolvePageatMaplesoftwithlinkstobooksrelatedtocomputeralgebraandsolvingODE's		

10 Programming languages

10.1 general links

1	http://rosettacode.org/wiki/Rosetta_Code	"Rosetta Code is a programming chrestomathy site. The idea is to present solutions to the same task in as many different languages as possible, to demonstrate how languages are similar and different"	1/20/16
2	http://redmonk.com/sogrady/	The RedMonk Programming Language Rankings	
3	http://www.tiobe.com/index.php/content/paperinfo/tpci/index.html	TIOBE index of computer languages	
4	http://www.kdnuggets.com/polls/	KDnuggets polls, software and data sciences	
5	http://www.iospress.nl/journal/scientific-programming/	Scientific Programming Journal, IOS press	
6	http://www.levenez.com/wall/	"Another Chart On The Wall" Has free charts can be put on walls, Unix history, windows history and computer languages, in pdf file. One has to print the file, and then tape the pages.	

7	http://www.nomdo.dds.nl/cw.htm	Notes on old ChiWriters, Tex like typesetting software which is no longer available.	
8	http://www.linuxtopia.org/online_books/advanced_bash_scripting_guide/	Advanced Bash-Scripting Guide. Good site to learn bash. Free online book on bash programming.	
9	http://www.commandlinefu.com/commands/browse	"commandlinefu.com is the place to record those command-line gems that you return to again and again."	
10	http://pleac.sourceforge.net/	PLEAC - Programming Language Examples Alike Cookbook	
11	http://prettydiff.com/?m=beautify\&html	On line diff tool to find differences between 2 files	
12	http://harmful.cat-v.org/software/	Site which list software it does not consider to be good and alternatives	
13	http://www.99-bottles-of-beer.net/	Site that has one programm written in 1500 different programming languages	

10.2 Ada

1	http://getadanow.com/	Ada FSF GNAT	9/2016
2	http://12000.org/my_notes/ada/index.htm	more links here	
3	https://github.com/HadrienG2/numerical-cookbook	github "numerical-cookbook This is an Ada 2012 re-implementation of some of the codes featured in Numerical Recipes, 3rd Edition."	Sept 2017
4	https://archive.legitdata.co/comp.lang.ada	Searchable comp.lang.ada archive dating back to 1982	June 18,2020

10.3 Lua

1	http://www.lua.org/cgi-bin/demo	Lua online compile	5/29/16
---	---	--------------------	---------

10.4 Ruby

hints:

Before installing rubi

```
sudo apt-get install libreadline-dev
```

to get backarrow to work in irb, then install/build ruby,
then do

```
set -o vi
```

```
#irb --noreadline
```

Just do irb will work.

1	http://ruby-doc.org/	Help and documentation for the Ruby programming language	6/15/15
2	https://www.ruby-lang.org/en/	Ruby language site	6/15/15
3	http://rubyinstaller.org/	Ruby installer for windows	6/15/15
4	http://gems.sciruby.com/	SciRuby gems, see this on how to install Ruby gems using the gem command. For example to install a gem do <code>sudo gem install extendmatrix</code>	6/15/15
5	http://sciruby.com/	Tools for Scientific Computing in Ruby	6/15/15

10.5 Fortran

1	https://gcc.gnu.org/onlinedocs/#current	All GCC compilers documentations (gfortran, gnat, etc...)	
2	http://www.nag.co.uk/sc22wg5/links.html	All Fortran standards	
3	http://www.nag.co.uk/sc22wg5/links.html	All Fortran standards	
4	http://www.nag.co.uk/sc22wg5/links.html	All Fortran standards	
5	http://eis.bris.ac.uk/~mexas/abatips/contours.html	Has examples with source and makefile showing how to make contour plots with Fortran and PGPLOT and gnuplot from Abaqus data.	1/1/2015
6	http://packages.simplyfortran.com/package/	Simplyfortran web site, has links to Fortran repositories to download source code	
7	http://slicot.org/	"The subroutine library SLICOT provides Fortran 77 implementations of numerical algorithms for computations in systems and control theory."	
8	http://fortranwiki.org/fortran/list	Fortran Wiki, links to libraries and folks in Fortran pages	
9	http://www2.mmm.ucar.edu/wrf/WG2/benchv2/WRFV2/main/	Fortran code for weather research and forecasting model, with makefile to build	

10	http://crd-legacy.lbl.gov/~dhbailey/mpdist/	Fortran libraries for extended precision ” contains the LBNL double-double precision, quad-double precision and arbitrary precision”	
11	http://ab-initio.mit.edu/wiki/index.php/Template:Installing_BLAS_and_LAPACK	MIT page, instructions how to install blas and lapack on the PC	
12	http://faculty.washington.edu/rjl/uwamath583s11/sphinx/notes/html/fortran_sub.html	nice fortran notes, univ. washington High Performance Scientific Computing AMath 483/583 Class Notes	
13	http://cims.nyu.edu/~donev/Teaching/PHY201/	PHY201 Physics Computations Teaching Fortran to Physics Majors, class notes, Aleksandar Donev, Dr. Phillip Duxbury Michigan State University, December 2000. Fortran 90/95	
14	http://exodus.physics.ucla.edu/vizexhibit/Mainpage.html	UCLA Dept. of Physics and Astronomy . Fortran programs for data Visualization	
15	http://www.stat.uchicago.edu/~lekheng/courses/302/wnr/nr.html	numerical reciepces critice, (compiled by W. Van Snyder)	
16	http://www.dmoz.org/Computers/Programming/Languages/Fortran/Libraries/	Links to Fortran source code libraries. dmoz.org	
17	http://www.sdsc.edu/~tkaiser/f90.html	Advanced Fortran 90 Timothy H. Kaiser,Ph.D. SDSC/NPACI, lots of good material and notes on Fortran	
18	https://eclipse.org/photran/	”Photran - An Integrated Development Environment and Refactoring Tool for Fortran based on Eclipse and the CDT. ” From eclipse	
19	http://www.fortranlib.com/freesoft.htm	FortranLib.com, links and Fortran resources	
20	http://jean-pierre.moreau.pagesperso-orange.fr/f_matrices.html	”PROGRAMS CONCERNING MATRICES IN FORTRAN 90 ” by Jean-Pierre	
21	http://www.physics.unlv.edu/~pang/cp_f90.html	”Fortran 90 and HPF Programs Related to the Book” Book Title: An Introduction to Computational Physics computational physics, unlv by Dr Tao Pang	
22	http://www.simconglobal.com/	Company makes Fortran tools, have free code formatter	
23	http://fortranwiki.org/fortran/show/Real+precision	Fortran Wiki, how to declare variables, using real precision, modern approach	
24	http://www.cs.rpi.edu/~szymansk/00F90/bugs.html#1	Lists Fortran common mistakes	
25	http://www.ibiblio.org/pub/languages/fortran/ch1-8.html	FORTRAN COMMON PITEFALLS	
26	https://gcc.gnu.org/onlinedocs/gfortran/Error-and-Warning-Options.html	gfortran warnings flags to use to make the program more robust	

27	http://softtalkblog.com/2012/04/23/istep-2012-why-fortran/	istep 2012 "why fortran" talk, links to coarray talks	
28	https://www.urz.uni-heidelberg.de/Dokumentation/f77to90/fortran.html	University of Linkoping, National Supercomputer Centre, Fortran links, texts.	
29	http://www.fortran.bcs.org/	Fortran specialist group, at BCS "to disseminate information about Fortran and its application in various fields,"	
30	http://doctran.co.uk/	A documentation generator for Fortran "Doctran is a cross-platform documentation generator for the Fortran programming language. Its purpose is to take free-format Fortran files, and produce a collection of html files documenting their contents. Doctran can currently create documentation from source codes that contain constructs from the Fortran 95 standard. Work to support the constructs of Fortran 2003 is in progress."	
31	http://jin.ece.illinois.edu/specfunc.html	Author site for "COMPUTATION OF SPECIAL FUNCTIONS" by Shanjie Zhang and Jianming Jin. Has link to Fortran routines in the book	
32	https://computation.llnl.gov/casc/software.html	ODE solvers ODEPACK	
33	http://nf.nci.org.au/training/FortranAdvanced/	NCI NF Advanced Fortran Programming notes./tutorials	
34	http://gcc.gnu.org/onlinedocs/gfortran/Intrinsic-Procedures.html	listing of Intrinsic Procedures gfortran	
35	http://www.personal.psu.edu/jhm/f90/	Home Page for Comp Sci 201F Sections 1-6 (Fortran) Instructor: John Mahaffy	
36	http://www.eng.iastate.edu/efmd/fmultarray.html	notes on Fortran MULTIDIMENSIONAL ARRAY	
37	http://www.cs.mtu.edu/~shene/COURSES/cs201/NOTES/format.html	Has formatted IO notes. MTU.edu	
38	http://www.phy.ornl.gov/csep/CSEP/PL/PL.html	Fortran 90 and Computational Science book web site	
39	http://www.nas.nasa.gov/publications/ams/2015/04-28-15.html	"40-minute talk on "NASA and the Future of Fortran", by Thomas Clune on April 28, 2015. Slides and audio of the talk are at the site above.	July 22, 2015
40	http://www.fortran.com/	Fortran.com site. Has Fortran resources, sells Fortran tools and software.	Nov 20, 2015

41	https://www.ma.utexas.edu/CNA/NA3/na3-fortran.html	” Numerical Analysis: Mathematics of Scientific Computing Third Edition David Kincaid And Ward Cheney Sample Fortran Computer Programs”	
42	ftp://ftp.nag.co.uk/sc22wg5/n1701-n1750/n1729.pdf	pdf file, ”The new features of Fortran 2008 John Reid,JKR Associates, UK May 27, 2008”	
43	http://fortranwiki.org/fortran/show/HomePage	”The Fortran Wiki is an open venue for discussing all aspects of the Fortran programming language and scientific computing.” Intrinsic procedures	
44	http://www.moreisdifferent.com/2015/07/16/why-physicsts-still-use-fortran/	blog entry ”Why physicists still use Fortran” by Daniel C. Elton, has examples showing how Fortran handles matrices very easily.	2/2017
45	http://www.fortran.uk/	Company with Fortan tools and charts, compares Fortran compilers also	
46	http://rosettacode.org/wiki/Arrays#Fortran	Examples at rosettacode.org showing common array operations	
47	https://fortran-lang.org/	Has Fortan news letter, comes out each month with Fortran news	May 1, 2020
48	https://github.com/vmagnin/gtk-fortran/wiki	GTK Fortran binding	May 19, 2020

10.6 Python

1	https://www.python.org/	Python Software Foundation site	
2	http://docs.scipy.org/doc/	Numpy and Scipy Documentation. Here is the Math functions in numpy	
3	https://store.enthought.com/downloads	Enthought, Inc. Makes Python distribution link to download	
4	https://www.continuum.io/downloads	Python Anaconda download	
5	https://docs.continuum.io/anaconda/pkg-docs	package list for Python Anaconda	
6	http://www.sympygamma.com/	sympy Gamma, is like Wolfram Alpha but in python sympy	July 2017
7	http://www.sympy.org/en/index.html	Main web page for sympy	
8	http://www.pyzo.org/python_vs_matlab.html	Another python distributions	
9	http://www.scipy.org/install.html	Has list of Python distributions	
10	https://www.cds.caltech.edu/~murray/wiki/Control_Systems_Library_for_Python	Python control systems library	

11	http://sjbyrnes.com/?page_id=67	Steve Byrnes's Python page with links	
12	http://continuum.io/downloads	"Anaconda is a completely free Python distribution (including for commercial use and redistribution). It includes over 195 of the most popular Python packages for science, math, engineering, data analysis."	
13	https://pypi.python.org/pypi	PyPi "the Python Package Index The Python Package Index is a repository of software for the Python programming language. There are currently 59615 packages here"	May 2015
14	http://blog.datacamp.com/r-or-python-for-data-analysis/	Blog, R and Python comparison. With many links at the end.	May 2015
15	http://electronicsforu.com/electronicsforu/circuitarchives/view_article.asp?sno=1802&b_type	Collection Of 51 Free eBooks On Python Programming, at web site called http://electronicsforu.com . Try sometime when if I decide to get into Python	Nov 2015
16	https://www.facebook.com/pythonlang	Python on facebook.	
17	http://bender.astro.sunysb.edu/classes/python-science/	Michael Zingale PHY 546: Python for Scientific Computing, using Python	
18	http://pythonbooks.revolunet.com/	web page that has lists of Python books	
19	http://jupyter.org/	Jupyter notebooks (IPython)	May 2016
20	http://treyhunner.com/2016/04/how-to-loop-with-indexes-in-python/	Page showing different python ways to do iterations	July 2017
21	https://github.com/sympy/sympy/wiki/Quick-examples	has sympy examples	July 2017
22	http://www.cfm.brown.edu/people/dobrush/am33/SymPy/index.html	sympy tutorial for ODE	July 2017

10.7 Julia

1	http://julialang.org/	Julia main site	
2	http://julialang.org/downloads/platform.html	instructions how to install Julia on different platforms	
3	http://docs.julialang.org/en/release-0.4/manual/noteworthy-differences/	Show differences between Julia and other languages, including Matlab	1/20/16
4	https://learnxinyminutes.com/docs/julia/	Useful tutorials	
5	http://docs.julialang.org/en/release-0.4/	official 0.4 version documentation	

6	https://jump.readthedocs.org/en/latest/	JuMP documentation	
7	http://docs.julialang.org/en/latest/manual/performance-tips/	Julia performance tips	
8	http://pkg.julialang.org/	Listing of Julia packages	
9	http://www.juliaopt.org/install.pdf	PDF file. Install Julia + IJulia + JuMP on your machine by following the instructions	
10	https://www.juliabox.org/	Run Julia inside your browser Log in with any google account and create a new file using "Julia 0 4 x". Once in, install JuMP by typing in "Pkg.add("JuMP")" and pressing SHIFT-ENTER.	
11	https://julialang.org/learning/books/	list of books on Julia	March 2021

10.8 Javascript

1	http://www.crockford.com/	Has lots of Java script stuff	
2	http://stackoverflow.com/questions/83444/starting-javascript-development-what-to-do	Post at stackexchange which has links to Javascript learning material	
3	https://www.processing.org/	Processing. This is 2/3D library for making animations in Javascript	
4	http://www.html5canvastutorials.com	Examples using HTML5 Canvas, circles, etc..	Oct 24, 2015
5	http://www.w3schools.com/canvas/default.asp	HTML canvas tutorial	
6	http://www.w3schools.com/tags/ref_canvas.asp	HTML Canvas Reference	
7	http://www.w3schools.com/js/js_html5dom_animate.asp	Javascript animations tutorials	
8	http://www.javascripter.net/faq/plotafunctiongraph.htm	Example using pure Javascript to make plot of sin and cosine on canvas	
9	http://www.jsgraphs.com/	site that compares all Javascript plotting and graphs libraries.	
10	http://people.iola.dk/olau/flot/examples/	Example of graphs made using flot javascript library	
11	http://www.maissan.net/articles/simulating-vines	Blog, shows simulating lines in javascript and HTML5 canvas	
12	http://physics.weber.edu/schroeder/html5/examples.html	links to many HTML5 simulation Examples, mostly physics, with menus and canvas	
13	http://physics.bu.edu/~duffy/HTML5/index.html	Lots of good HTML5 canvas physics simulation, has links to other HTML5 simulation pages	

14	http://www.ckollars.org/canvas-two-coordinate-scales.html	blog article on coordinates system for HTML5 canvas and drawing on it, talks about the model and the display coordinates	
15	http://www.javascripter.net/faq/	Javascript Faq, has example function for plotting sin/cos among many others. Useful pages	
16	http://mrdoob.github.io/three.js/	three.js, javascript library for 3D	
17	http://brm.io/matter-js/	Matter.js is a 2D physics engine for the web. Nice demos	5/11/16
18	https://www.chromeexperiments.com/webgl	"Chrome Experiments is a showcase of web experiments written by the creative coding community". has lots of webgl demos	
19	https://github.com/google/code-prettify	listing code in HTML using code-prettify	5/25/16
20	http://hilite.me/	site you can paste code in, and show the highlighting. Based on Pygments, gives the HTML code	
21	https://gohugo.io/extras/highlighting/	lists java script client side libraries for code highlighting on a web page	
22	http://prismjs.com/	Prism is a lightweight, extensible syntax highlighter	
23	http://mathjs.org/index.html	Math.js site, examples	
24	https://github.com/liabru/matter-js#demos	Javascript 2D matter-js physics library	Oct 14, 2017
25	http://www.pixijs.com/	2D Javascript graphics library	Oct 2017
26	http://google.github.io/liquidfun/	LiquidFun is a 2D rigid-body and fluid simulation, it has Javascript API	Oct 2017
27	https://www.myphysicslab.com/index-en.html	Physics Simulations at myphysicslab. Very good simulations	Oct 2017
28	https://www.w3schools.com/js/	Learn Javascript at W3 school. Very good, since it has "try it for yourself" examples	Oct 2017
29	https://www.webpagefx.com/blog/web-design/bouncing-a-ball-around-with-html5-and-javascript/	Has good tutorial on making bouncing ball in Javascript and other links	Nov 6, 2017
30	http://eloquentjavascript.net/	Book site for eloquent javascript	Dec 2, 2017
31	http://processingjs.org/	processing.js demos	December 2017
32	https://www.w3schools.com/html/html_form_input_types.asp	input types (form) in HTML5	Jan 2018
33	http://corehtml5canvas.com/code-live/	CANVAS html5 live examples	Feb 2018
34	http://matt.might.net/articles/rendering-mathematical-functions-in-javascript-with-canvas-html/	blog article on plotting functions in javascript	

35	https://stemkoski.github.io/Three.js/	Three.js plotting examples	Feb 2018
36	https://github.com/plotly/plotly.js	"Built on top of d3.js and stack.gl, plotly.js is a high-level, declarative charting library". github plotly javascript library for plotting, main documentation at https://plot.ly/javascript/ . Tgus https://plot.ly/javascript/animations/ has example plotting sine and cosine and circle	
37	https://developer.mozilla.org/en-US/docs/Web/API/Canvas_API/Tutorial/Drawing_shapes	Tutorial drawing shapes on canvas, developer.mozilla.org. See also https://developer.mozilla.org/en-US/docs/Web/Tutorials	Feb 2018
38	https://www.jasondavies.com/animated-bezier/	Animated Bézier Curves using Javascript , uses D3.js	
39	https://www.jasondavies.com/animated-trig/	Animated Trigonometry, javascript, uses D3.js	
40	https://mauriciopoppe.github.io/function-plot/	"Function Plot is a plotting library built on top of D3.js used to render functions with little configuration" see https://github.com/mauriciopoppe/function-plot	Feb 2018
41	https://javascript.info/	"The Modern JavaScript Tutorial	Feb 2021

10.9 Java

1	http://www.falstad.com/mathphysics.html	Falstad java applets. Nice applets.	
2	http://www.developer.com/java/data/3d-graphics-in-javafx.html	Article on 3D in JavaFx. But strange that no images are shown for the 3D app	May 2015
3	http://wwwvis.informatik.uni-stuttgart.de/~kraus/LiveGraphics3D/	showing examples of Java3D demos. non-commercial Java 1.1 applet by Martin Kraus. But need to be able to run applets in browser, which is almost impossible these days	2015
4	https://www.manning.com/books/java-3d-programming	Java 3D Programming, book site, by Daniel Selman. Is Java 3D still being used?	
5	http://docs.oracle.com/javase/8/index.html	Java Platform, Standard Edition (Java SE) 8 documentation. Click on Client for JavaFX	Nov 2015
6	http://stackoverflow.com/questions/27958019/embed-a-javafx-application-in-a-html-webpage	Stackoverflow answer on how to Embed a JavaFX application in a HTML webpage. Another question on same topic here and here	Jan 15, 2015

10.9.1 Java links related to building standalone or one jar apps

1	https://docs.oracle.com/javase/8/docs/technotes/tools/unix/javapackager.html	javapackager Performs tasks related to packaging and signing Java and JavaFX applications. see this also	
2	http://openjdk.java.net/jeps/208	JEP 208: Java Packager Improvements, for JDK 8	
3	http://openjdk.java.net/jeps/275	JEP 275: Modular Java Application Packaging, openJDK, for Java 9 packaging, new tool	
4	https://java.net/downloads/appbundler/appbundler.html	It says AppBundler, Generates a native launcher for a Java application. but do not know yet how this fits with javapackager and if it is needed. See this blog Packaging Java applications for Mac OS, javapackager about it, and the blog shows example using javapackager	
5	https://docs.oracle.com/javase/tutorial/deployment/selfContainedApps/index.html	Lesson: Deploying Self-Contained Applications, Oracle. MOre links there on making self contained Java apps	
6	https://community.oracle.com/message/10266894	Packaging JavaFx Applications in a single executable JAR question	
7	http://stackoverflow.com/questions/20990386/creating-a-bundle-jar-for-javafx-application	question at stackoverflow about making one jar for JavaFX with Ant	

10.10 Perl

1	http://www.perlmonks.org/	Perl monks, place to ask Perl questions.	
2	http://perlmeme.org/	"Here at perlmeme.org we want to answer the question, "Where can I learn about Perl?" "	
3	http://rakudo.org/how-to-get-rakudo/	To get Perl 6, rakudo.org	
4	http://www.perlfoundation.org/perl6/index.cgi	Perl 6 foundation org	
5	http://perl6.org/documentation/	Perl 6 programming documentation	
6	http://perldoc.perl.org/	Perl 5 programming documentation	
7	https://metacpan.org/	Perl cpan, to install something do <code>sudo cpanm Text::Sprintf::Named</code>	
8	https://www.cs.tut.fi/~jkorpela/perl/regexp.html	summary of Perl regular expressions	

10.11 XML

1	http://www.freeformatter.com/xsd-generator.html	On line site, paste the XML in one windows and it gives the XSD scheme.	
2	http://www.rwardell.com/rtw/projects/emitxml.htm	Site that goes over using excel and XML, has some useful hints.	
3	http://www.functionx.com/xml/Lesson01.htm	good intro to XML	

10.12 Matlab

1	http://www.mathworks.com/	Mathworks main site	
2	http://www.mathworks.com/matlabcentral/answers/	Matlab answers. Place to ask questions. But slow and not well designed interface. Strange that it is almost impossible to find questions with any +1 vote on them	
3	http://stackoverflow.com/questions/tagged/matlab	Ask Matkab questions at stackexchange.	
4	http://undocumentedmatlab.com/blog/matlab-layout-managers-uicontainer-and-relatives	Tutorial on uiflowcontainer, gridcontainer, layout manager	
5	http://www.mathworks.com/help/techdoc/ref/gallery.html	gallery matlab command. returns the test matrices specified by matname	
6	http://www.tech.plym.ac.uk/spmc/links/matlab/matlab_tips.html	someone collected MATLAB Tips from matlab forum.	7/9/2008
7	http://pordlabs.ucsd.edu/matlab/	Page with Matlab tips and tricks, from UCSD.edu	

10.13 C++

1	http://www.stroustrup.com/C++11FAQ.html	C++11 - the new ISO C++ standard page of Bjarne Stroustrup	
2	https://isocpp.org/	ISO c++ page	
3	https://isocpp.org/std/status	Has time line diagram of C++ standards with features added in each, and list of current active C++ projects for next version	
4	https://isocpp.org/wiki/faq/cpp11	iso C++ wiki, c++ faq with lots of links	
5	http://www.codeproject.com/Articles/570638/Ten-Cplusplus-Features-Every-Cplusplus-Developer-Should-Use	Code project C++ entry Ten C++11 Features Every C++ Developer Should Use	
6	http://www.trumphurst.com/cpplibs/cpplibs.php	Available C++ Libraries FAQ, maintained by triumphurst.com	

7	http://www.open-std.org/jtc1/sc22/wg21/docs/papers/2016/p0267r0.pdf	"A Proposal to Add 2D Graphics Rendering and Display to C++"	2/25/16
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10.14 PhP

1	http://www.hackingwithphp.com/	hacking with PHP, good hints on setting PHP scripts	
2	http://php.net	has PHP commands	
3	http://eta-lang.org/	"Eta is a pure, lazy, strongly typed functional programming language on the JVM." one can try it online also	

10.15 HTML, CSS, web fonts

1	http://webstyleguide.com/wsg3/8-typography/4-web-typefaces.html	Has on the screen side-by-side comparing fonts. Help select font for pages.	
2	http://www.w3schools.com/cssref/default.asp	w3 school. CSS reference.	
3	http://findicons.com/	Find icons, site to find icons for web pages	
4	http://www.cssfontstack.com/Big-Caslon	site you enter the fonts and it gives the CSS code	
5	http://pages.cs.wisc.edu/~ghost/	Where to download Ghostscript, Ghostview and GSview	
6	http://blog.miragestudio7.com/architecture-fonts-download-free-architect-handwriting-font/3339/	Blog with 23 Architectural Fonts, Download Free Fonts Similar To Architect's Handwriting	
7	http://www.911fonts.com/search.php?s=itc&p=3	911fonts, Fonts, download free fonts	
8	http://www.typpetester.org/	Test and compare more than 2200 typefaces	June 30, 2015
9	http://people.umass.edu/klement/imp/imp.html	Very nice as it allows one to change font and see the INTRODUCTION TO MATHEMATICAL PHILOSOPHY by BERTRAND RUSSELL on line and it also has PDF versions.	
10	http://archive.org/web/web.php	The internet archive.	
11	http://www.lifehack.org/articles/technology/30-incredibly-useful-websites-you-wish-you-knew-earlier.html	"29 Incredibly Useful Websites You Wish You Knew Earlier", might come handy someday	
12	http://www.labnol.org/internet/101-useful-websites/18078/	"The 101 Most Useful Websites" check later	July 2014

13	http://www.comptechdoc.org/independent/web/html/guide/htmlcssprop.html	has listing of all style variables for CSS	
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11 Universities specific links

11.1 General

1	http://toughstem.com/	A question answer community on a mission to share Solutions for all STEM major Problems	
2	http://academicearth.org/	Finds on-line video courses	1/1/2015
3	http://www.ukeas.com.tw/rankings.htm	Has tables of UK schools ranking	1/1/2015
4	http://www.studentsreview.com/	univ. reviews by students, for example UC San Jose and UW madison	1/1/2015
5	http://www.canadian-universities.net/Campus/Tuition-Fees-Ontario.html	can find fees at Canada schools	1/1/2015
6	http://www.univsource.com/	This site lists all schools in each state	1/1/2015
7	http://www.ordoludus.com/costs.php?sort=tuition&dir=up#data	ranks schools by other items such as cost	1/1/2015
8	http://www.stateuniversity.com/rank/os_on_total_rank.html	500 schools ranked by cost	1/1/2015
9	http://www.studentsreview.com/big_ten_compare.html	compare big ten universities in many areas	1/1/2015
10	http://collegesearch.collegeboard.com/	can find cost per credit for many schools	1/1/2015
11	http://www.collegecalc.org	can find cost per credit, for example for Ohio state univ and search the page for Cost Per Credit Hour	
12	http://colleges.findthebest.com/	site to compare ten universities, has cost per credit hr	1/1/2015
13	http://www.findamasters.com/	site to search for masters degree in UK and Irland	1/1/2015
14	http://unex.uci.edu/services/contacts/uc_extensions/	links to all Univ. of California extensions	1/1/2015
15	https://www.coursera.org/	Take free courses from universities sites.	
16	https://www.edx.org/course	Another site to take free courses from universities sites.	
17	http://superscholar.org/careers/	web site to find schools and degrees. Did not try it much, but it seems ok	
18	http://ope.ed.gov/accreditation/	list of nationally recognized accredited universities	
19	https://sinews.siam.org/Details-Page/engineering-mathematics-around-the-world	SIAM. list of some of the institutions worldwide that offer programs in engineering mathematics. Basically, it seems just Applied and computational Mathematics.	4/14/17

20	http://search.geebeeworld.com/search/USA-Masters+Degree-Signal	List of universities in US with MS in EE specialized in signals	6/2017
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11.2 CSU Fullerton

1	http://www.ou.fullerton.edu/registration.aspx	Registrar and class schedule	
2	http://www.summer.fullerton.edu/	summer session	

11.3 Purdue University, West Lafayette, IN

1	https://selfservice.mypurdue.purdue.edu/prod/bwckschd.p_disp_dyn_sched	class schedule Purdue University, 610 Purdue Mall, West Lafayette, IN 47907, (765) 494-4600	
2	http://www.purdue.edu/bursar/tuition/fees_wl.html	fees	
3	http://www.purdue.edu/bursar/tuition/fees_wl.html	fees, here is part time and this is tuition calculator	
4	http://www.purdue.edu/registrar/currentStudents/residency/index.html	Residency	
5	https://engineering.purdue.edu/AAE/Academics/Courses/Descriptions	Aerospace courses and web site	
6	https://engineering.purdue.edu/ME/InfoFor/CurrentStudents/index.html	ME program, courses	
7	http://www.purdue.edu/catalogs/	Course catalogs	

11.4 University of Wisconsin, Madison

1	http://courses.engr.wisc.edu/	List of engineering courses	
2	https://piazza.com/	site to use for my class discussions at UW	
3	http://www.wisc.edu/	main site	1/1/2015
4	https://coursedashboard.learnuw.wisc.edu/	Learn at UW. Site to access courses	1/1/2015
5	http://registrar.wisc.edu/dates_deadlines.htm	dates and deadlines for all semesters	1/1/2015
6	http://today.wisc.edu/	Events each day at university	

7	http://grad.wisc.edu/about/gsledership/	graduate school, contacts Graduate School 217 Bascom Hall 500 Lincoln DriveMadison, WI 53706 PH 608-262-2433 FX 608-265-6742 EMAIL gswebmaster@grad.wisc.edu Office hours: Monday-Friday 7:45 a.m.-4:30 p.m.	1/1/2015
8	http://www.math.wisc.edu/contact-us	Math dept. contacts . Kathie Keyes for Graduate Program Coordinator, Jordan Ellenberg for Director of Graduate Admissions.	
9	https://kb.wisc.edu/cae/search.php	search CAE school software	1/1/2015
10	https://myfiles.cae.wisc.edu	My files at CAE link	1/1/2015
11	https://courses.moodle.wisc.edu/prod/local/wiscservices/login/index.php	Moodle site, Another site to access courses	1/1/2015
12	http://registrar.wisc.edu/schedule_of_classes_students.htm and https://portal.isispub.wisc.edu:7052/psp/public/EMPLOYEE/HRMS/c/COMMUNITY_ACCESS.CLASS_SEARCH.GBL	class schedule	1/1/2015
13	http://text.uwbookstore.com/selectTermDept.aspx	Text books for courses	
14	https://my.cae.wisc.edu/	CAE (Computer Aided Engineering) site.	1/1/2015
15	http://mediasite.engr.wisc.edu/	Video library, access to course videos	1/1/2015
16	http://registrar.wisc.edu/tuition_&_fees.htm	To find tuition and fees	1/1/2015
17	https://www.engr.wisc.edu/app/uploads/2016/01/EMA_Future_Courses_v01_031116_Modified-2_FINAL-1.pdf	Engineering mechanics future courses	8/20/16
18	https://www.math.wisc.edu/wiki/index.php/Applied/ACMS	Applied and Computational Mathematics Seminars	1/1/2015
19	http://continuingstudies.wisc.edu/advising/univspec.htm	University Special Students	1/1/2015

11.4.1 Links to selected courses at university of Wisconsin, Madison

1	http://www.ece.wisc.edu/~dobson/ECE717/ece717.html	ECE 717 STATE SPACE SYSTEMS ANALYSIS, fall 2008, by Dr Ian Dobson.	3/30/2014
2	http://sbel.wisc.edu/Courses/ME751	ME751, Advanced Computational Multibody Dynamics, SEBL lab, by Dr Dan Negrut	3/30/2014
3	http://sbel.wisc.edu/Courses/ME964/	ME964/ME759: High-Performance Computing for Applications in Engineering	3/30/2014

4	http://sbel.wisc.edu/Courses/ME964/	ME964/ME759: High-Performance Computing for Applications in Engineering	1/12/2011
5	http://sbel.wisc.edu/Courses/ME451/	ME451: Kinematics and Dynamics of Machine Systems	1/12/2011
6	http://sbel.wisc.edu/Courses/ME451/2011/bookHaugPointers.htm	Edward J. Haug: Computer Aided Kinematics and Dynamics of Mechanical Systems (Allyn and Bacon, 1989) Text book used.	1/12/2011
7	http://sbel.wisc.edu/Courses/ME440/	ME440: Intermediate Vibrations Text book used.	1/12/2011
8	http://wiscsoftware.wisc.edu/wisc/	buy student software	
9	https://johnstonmd.wordpress.com/teaching/math-415-fall-2014/	Math 415 and other Math courses taught by Matthew D. Johnston	Oct 2015

11.5 University of Wisconsin-Milwaukee, WI

1	http://www4.uwm.edu/schedule/	Class schedule. Textbooks in book is store is here	
2	http://uwm.edu/engineering/academics-2/departments/mechanical-engineering/	Mechanical engineering dept. Contact list is here	
3	https://apply.wisconsin.edu/	Apply on-line web page Office of Undergraduate Admissions University of Wisconsin - Milwaukee Mellencamp Hall, Room 212 phone: (414) 229-2222 email: uwm-look@uwm.edu Registrar office Office Location Mellencamp Hall #274 2442 E Kenwood Blvd Milwaukee, WI 53211 Mailing Address UW-Milwaukee Registrar's Office P.O. Box 729 Milwaukee, WI 53201-0729 Contact Phone: (414) 229-3800 Fax: (414) 229-6940 Email: contactro.uwm.edu	

11.6 University of Wisconsin-Green Bay, USA

1	http://www.uwgb.edu/	main web page	
2	http://sis.uwgb.edu/schedule/	class schedule	

11.7 University of California, Berkeley

1	http://extension.berkeley.edu/info/concurrent.html	concurrent enrollement	
2	http://schedule.berkeley.edu/	schedule of classes	
3	<ol style="list-style-type: none"> 1. http://math.berkeley.edu/~wilken/228A.F07/ Math 228A Numerical Solution of Differential Equations 2. http://math.berkeley.edu/~wilken/228B.S07/ Math 228B Numerical Solution of Differential equations 3. http://math.berkeley.edu/~wilken/228A.F06/ Math 228A Numerical Solution of Differential, fall 2006 4. http://math.berkeley.edu/~wilken/204A.F06/ Math 204A Ordinary and Partial Differential fall 2006 archived 5. http://math.berkeley.edu/~wilken/224B.S06/ Math 224B Mathematical Methods for the Physical Sciences, Spring 2006 6. http://math.berkeley.edu/~wilken/275.F05/ Math 275 Topics in Applied Mathematics, Fall 2005 	Some UC berkeley numerical/computational courses in the Math dept by Wilken	1/31/2010
4	http://math.berkeley.edu/~reb/courses/121B/index.html	Mathematics 121B, UC Berkely Spring 2004. I took this course. by Richard Borcherds.	1/31/2010
5	http://www.cs.berkeley.edu/~demmel/	Number of computational courses by James Demmel at UC Berkeley, many on parallel and matrix computation.	1/31/2010

11.8 University of California, Irvine (UCI)

1	https://wiki.eee.uci.edu/index.php/Main_Page	EEE WIKI	
2	http://www.reg.uci.edu/navigation/calendars.html	Academic Calendars	
3	http://www.editor.uci.edu/catalogue/	University of California, Irvine General Catalogue	
4	http://www.editor.uci.edu/04-05/engr/engr.9.htm	listing of Courses in Computer Science and Engineering, EE	
5	http://www.editor.uci.edu/04-05/engr/engr.11.htm	listing of Courses Mechanical	
6	http://www.editor.uci.edu/04-05/engr/engr.7.htm	listing of Courses Civil engineering	

7	http://www.editor.uci.edu/04-05/ps/ps.8.htm	listing of Courses Physics	
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11.9 UC Davis, California

1	https://extension.ucdavis.edu/	Extension office	
2	http://engineering.ucdavis.edu/dlp/	Distance learning DLP, (DLP) classes are broadcast via the Internet to Lawrence Livermore National Laboratory (LLNL) and Sandia National Laboratories (SNL) students and employees	
3	http://web.ece.ucdavis.edu/~levy/eec150A.html	EEEC150A Signals and Systems I, 2010	8/2011
4	https://registrar.ucdavis.edu/courses/search/index.cfm	Class search	
5	http://registrar.ucdavis.edu/registration/index.cfm	University Registrar To request official transcripts from the University of California at contact 800-752-0881 or 530-757-8880	
6	http://my.ucdavis.edu/	Email access	
7	https://sisweb.ucdavis.edu/	to sign up for courses	
8	http://www.ece.ucdavis.edu/Courses and schedule at http://www.ece.ucdavis.edu/academics/courses/	EE dept web site.	
9	http://london.ucdavis.edu/~zieve/phys104/phys104.html	Physics 104A Mathematical methods of physics , fall 2012	7/15/2010

11.10 CAL POLY POMONA, Pomona, California

1	http://schedule.cpp.edu/	Public Class Schedule (use ECE, or ARO or ME for subjects) College of the Extended University 3801 W. Temple Ave., Pomona CA 91768 phone: 909.869.2288 toll free phone: 877.398.8648	
2	http://www.cpp.edu/~registrar/index.shtml	Registrar. contact at http://www.cpp.edu/~registrar/contact-us/ Order transcript at http://www.cpp.edu/~registrar/forms-services/transcript.shtml	
3	http://www.csupomona.edu/~jskang/	Dr James S. Kang page, took one course EE 408 (DSP)	
4	http://www.cpp.edu/~ece/program/descriptions.html	EE course description	

5	http://mbrreading.org/apfelzer/toc/405toc/405toc.html	ECE 405 - COMMUNICATION SYSTEMS web page, CAL POLY POMONA - FALL 2005	
6	http://www.broncobookstore.com/buy_main.asp	Textbooks, Bronco bookstore, Official Cal Poly Pomona textbooks	

11.11 madison college, Wisconsin

1	http://programs.madisoncollege.edu/courses/all/	Public Class Schedule	
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11.12 University of Minnesota

1	http://twin-cities.umn.edu/	Main site	
2	https://onestop.umn.edu/academics/classes	class schedule	
3	http://www.bookstores.umn.edu/	Book store, textbooks	
4	http://onestop.umn.edu/finances/costs_and_tuition/tuition_and_fees/index.html	one stop, fees, about \$400 per unit, questions, ask 612-624-1111, or email onestop@umn.edu, but graduate is expensive 612-625-2008 for non-admitted student	
5	https://onestop.umn.edu/non-degree/undergraduate_steps.html	Activate registration web site	
6	http://www.unite.umn.edu/	E-Learning web site, for on-line courses 612-624-2332, to access on-line courses, after registration go to https://idp2.shib.umn.edu/idp/umn/login	
7	http://en.wikipedia.org/wiki/List_of_colleges_and_universities_in_Minnesota	Wikipedia list of universities in MN	
8	http://www.metrotransit.org/metro-green-line	New rail way to university, Minnesota	
9	http://www.aem.umn.edu/srs	Requests for AEM permission numbers	Dec 2017

11.13 Northeastern Univ., Boston

1	http://www.northeastern.edu/	Main site Northeastern University, 360 Huntington Avenue, Boston, Massachusetts 02115 , 617-373-2000	
2	http://www.northeastern.edu/registrar/	Registrar 617-373-2300	
3	http://www.northeastern.edu/commencement/	Commencement office, for lost degree replacement. Campus Location: 230 Cushing Hall Phone: 617.373.4098 Fax: 617.373.8530 Email: Commencement@neu.edu see forms here	

11.14 Florida State Univ.

1	http://www.fsu.edu/	Main, site. Tallahassee, FL 32306-2480	
2	http://registrar.fsu.edu/dir_class/class_search/	class schedule	2/20/15

11.15 Drexel University, Philadelphia, PA

1	https://duapp2.drexel.edu/webtms_du/app	class schedule	
2	fees	Fees (expensive)	

11.16 UCSB, California

1	https://my.sa.ucsb.edu/public/curriculum/coursesearch.aspx	class schedule	
2	http://extension.ucsb.edu/index.jsp	extension, called open univ, fees are here and dates for summer courses are here	
3	https://me.ucsb.edu/	Mechanical eng. dept Department of MECHANICAL ENGINEERING Building II, Room 2355 University of California, Santa Barbara Santa Barbara, CA 93106-5070 805-893-2430	
4	https://registrar.sa.ucsb.edu/contact.aspx	Registrar 1101 Student Affairs and Administrative Services Building (SAASB) University of California Santa Barbara, California 93106-2015 Phone: (805) 893-3592	

11.17 Oregon state univ. corvallis, Oregon

1	http://catalog.oregonstate.edu/SOC.aspx	class schedule (most classes are 3 days per week)	
2	http://oregonstate.edu/admissions/main/non-degree-student-admission-information-0	Non-Degree Student Admission Information, and link to apply "Non-degree students enrolled for eight or fewer credits are assessed tuition and fees at resident rates based on undergraduate or graduate course level." <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">Office of Admissions Oregon State University 104 Kerr Administration Building Corvallis, OR 97331 Telephone: 541-737-4411</div>	
3	http://summer.oregonstate.edu/tuition/chart.htm	summer session	

4	http://catalog.oregonstate.edu/courseoutlook.aspx	Course catalog	
5	http://ecampus.oregonstate.edu/services/tuition/	e-campus, online	

11.18 University of Washington, Seattle

1	http://www.nondegree.washington.edu/nondegree/fees/	Fees. Undergraduate (below 499), \$1125 per 3 units. Graduate much more expensive \$2277 per 3 units course.	
2	http://www.washington.edu/students/timeschd/	class schedule	

11.19 California State University, Sacramento

1	http://www.cce.csus.edu/index.cfm	open university 3000 State University Drive East, Sacramento, CA 95819-6103 (916) 278-4433	
2	http://www2.csus.edu/class_schedule/	class schedule	

11.20 Oakland university, Michigan

1	https://sail.oakland.edu/PROD/bwckschd.p_disp_dyn_sched	class schedule	
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11.21 Penn state university, University Park, Pennsylvania

1	http://schedule.psu.edu/	class schedule	
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11.22 Coloardo University of Mines, CO

1	http://www.mines.edu/	Main page	
2	http://inside.mines.edu/Registrars_Office	Registrar, class schedule is here	

11.23 Cornell Univ.

1	https://www.sce.cornell.edu/ss/	Summer session	
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11.24 University of Waterloo

1	https://cs.uwaterloo.ca/cscf/teaching/schedule/	University of Waterloo computer science class schedule	
2	http://www.adm.uwaterloo.ca/infocour/CIR/SA/uwpcshtm.html	Course Selection Offerings List for Undergraduate Students Spring 2016 (1165)	

3	https://uwaterloo.ca/finance/student-accounts/tuition-fee-schedules	fees and calander. in Canada they have strange names for semesters: Fall Term : September to December, Winter Term : January to April, Spring Term : May to August. I guess they do not like to use summer term.	
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11.25 Iowa state university, Ames, IA

1	http://classes.iastate.edu/	Iowa state university class schedule. Ames, IA 50011 (515) 294-4111	
2	http://www.distance.iastate.edu/getting-enrolled/	Online and Distance Learning. Courses that are XE session are online. Call Engineering-LAS Online Learning 2273 Howe Hall, Suite 1328, Ames, IA 50011-2273 515-294-7470 or 800-854-1675 Main Office: elo@iastate.edu, Tech Support: elotech@iastate.edu	
3	http://www.registrar.iastate.edu/	Office of the Registrar, 214 Enrollment Services Center, Ames, IA 50011-2011, (515) 294-1840, press 5 fees are 1,356 for graduate, 831 for non graduate. Up to 4 credit only.	

11.26 University of Iowa, Iowa City, IA

1	http://registrar.uiowa.edu/academic-calendar	registrar	
2	https://myui.uiowa.edu/my-ui/courses/dashboard.page	class schedule	
3	http://catalog.registrar.uiowa.edu/engineering/mechanical-industrial-engineering/#coursestext	ME courses (down the page)	
4	http://www.iowabook.com/textbooks.html	text books at book store	
5	https://www.maui.uiowa.edu/maui/pub/tuition/rates.page	Fees per hr, for resident and non-resident. up to 4 units, same fees	3/25/16
6	https://www.maui.uiowa.edu/maui/pub/tuition/projection.page	Tuition Calculator	

11.27 University at Buffalo. Buffalo, New York

1	http://registrar.buffalo.edu/schedules/index.php	Class schedule UB. registrar: Phone: 716-645-5698. north campus	
2	http://studentaccounts.buffalo.edu/tuition/	Fees	

11.28 University of Cincinnati, Cincinnati OH

1	https://webapps2.uc.edu/scheduleofclasses/	Class schedule, University of Cincinnati 2600 Clifton Ave. Cincinnati OH 45221	
2	https://admissions.uc.edu/costs.html	Fees. Part-Time per Hour resident: \$459, non-reident \$1,098	

11.29 UC merced , California

1	http://registrar.ucmerced.edu/services/special-programs/concurrent-enrollment-program-extension	Extension fees. First Time Enrollee Application Fee \$55.00 Prior Concurrent Enrollment Student Application Fee \$10.00 Late Application Fee – Required beginning the first day of instruction \$100.00 Per Unit Registration Fee \$406.00	
2	http://registrar.ucmerced.edu/schedules	class schedule	

11.30 Simon Fraser University, Canada

1	http://www.sfu.ca/about	contact numbers	
2	http://www.sfu.ca/students/calendar/2016/summer.html	Academic Calendar SUMMER 2016 and fees, Simon Fraser University 8888 University Drive Burnaby, B.C. Canada V5A 1S6	
3	http://www.sfu.ca/students/calendar/2016/summer/courses/macm.html	Summer 2016 courses in MACM. Have computer algebra courses	
4	http://www.sfu.ca/students/calendar/2016/summer/academic-dates/2016.html	Dates and deadlines, for summer also see this For actual class search see this and click on class search under guest	
5	https://www.sfu.ca/itservices/technical/webcams.html	SFU.edu web cams. Also here	

11.31 University of Illinois, Chicago. UIC

1	https://ossswebcs.admin.uillinois.edu/portal_uic/class_schedule/searchclasses.asp	class schedule, University of Illinois System, Chicago UIC 108 Henry Administration Bldg. Urbana, IL 61801	
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11.32 Rutgers University. The State University of New Jersey

1	https://sis.rutgers.edu/soc/	class schedule, Rutgers University. The State University of New Jersey. Fees \$878/credit hour	April 2017
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11.33 Stockton and Billingham Technical College

1	https://picturestocktonarchive.wordpress.com/2002/05/25/stockton-and-billingham-technical-college-in-1959/	site than contains some old pics of Stockton and Billingham Technical College which was demolished number of years ago. Very hard to find picks of this college. It is all gone now.	April 2017
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11.34 MIT

1	https://stellar.mit.edu/index.html	MIT Course Management System site	Sept. 2017
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12 AI

1	https://www.kdnuggets.com/2016/10/artificial-intelligence-deep-learning-neural-networks-explained.html	"This article is meant to explain the concepts of AI, deep learning, and neural networks at a level that can be understood by most non-practitioners" by Alex Castrounis, InnoArchiTech.	Nov 2017
2	https://www.innoarchitech.com/machine-learning-an-in-depth-non-technical-guide/	"Machine Learning: An In-Depth Guide - Overview, Goals, Learning Types, and Algorithms" By Alex Castrounis	
3	https://www.youtube.com/watch?v=IHZwWFHwa-w	You tube video on neural networks	Nov 12, 2017

13 Connecting Linux to windows, sharing files between, SAMBA

1	https://www.howtogeek.com/176471/how-to-share-files-between-windows-and-linux/	"How to Share Files Between Windows and Linux by Korbin Brown on May 22nd, 2017" has images to help show the process also	Sept 2017
2	https://www.computerhope.com/issues/ch001636.htm	"How to share files between a Linux and Windows computer"	Sept 2017
3	http://www.wikihow.com/Create-a-Local-Area-Network-(LAN)	"wikiHow to Create a Local Area Network (LAN) This wikiHow teaches how to create a LAN (Local Area Network), which allows connected computers and devices to talk to each other and access the interne "	sept 2017
4	https://www.bleepingcomputer.com/forums/t/598615/a-simple-beginners-guide-to-setting-up-a-samba-share/	A Simple Beginners Guide to Setting up a Samba Share	July 2018

14 Windows

1	http://windows.microsoft.com/en-us/windows/preview-iso	Windows 10 preview ISO	4/1/2015
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2	http://stackoverflow.com/questions/186737/whats-the-fastest-way-to-delete-a-large-folder-in-windows	Trick for fast delete of files del /f/s/q foldername > nul rmdir /s/q foldername	
3	http://ipmsg.org/tools/fastcopy.html.en	Fast copy free tool	
4	http://www.winhelponline.com/blog/file-asso-fixes-for-windows-7/	file association fixes for windows 7. If loses file assoction, this has registry fixes	
5	http://stackoverflow.com/questions/9106825/how-to-execute-16-bit-installer-on-64-bit-win7	How to execute 16-bit installer on 64-bit Win7?	

15 MySQL

1	http://dev.mysql.com	My SQL, free database	6/25/2015
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16 Internet searches, whois, other useful tool for interner

1	https://whois.icann.org/	search domain contact by typing domain name. WHOIS official site	
2	http://whatismyipaddress.com/	To find my IP address and its location	

17 Tikz, solidworks, CAD, and other Engineering graphics

1	http://alexdu.github.io/sketch-lib/	Tikz sketch-lib, 3D solids library for sketch	1/1/2015
2	http://sketch4latex.sourceforge.net/	sketch program, generated latex/tikz code from sketch own language. "Sketch is a small, simple system for producing line drawings of two or three-dimensional solid objects and scenes." manual is here	1/1/2015
3	http://www.solidworks.com/	Solidworks 3D graphics company	

18 Books online, places to buy cheap books, book collections, databases

1	https://www.worldcat.org/	World cat. Search for books on all libraries.	March 2021
2	https://archive.org/details/texts	Internet Archive site. Can find old books online	1/1/2015

3	http://digital.library.upenn.edu/webbin/book/subjectstart?QA	Univ. of Penn. online books page. Also http://onlinebooks.library.upenn.edu/	
4	http://www.goodreads.com/author/list/186483.Leonhard_Euler	List of Euler books	
5	http://www.mathtable.com/gr/	Gradshteyn and Ryzhik Table of Integrals, Series, and Products Home Page	
6	http://www.intechopen.com/books	InTech publisher Books	
7	www.springerlink.com	springer book publisher	
8	https://newcatalog.library.cornell.edu/digitalcollections	Cornell edu ebooks library	
9	http://ebooks.cambridge.org/	Cambridge University Press , online books	
10	https://docs.google.com	Google docs	
11	http://www.valorebooks.com/	ValoreBooks, discount online book store	
12	http://www.thebookcollector.co.uk/	"THE BOOK COLLECTOR is the only journal in the world that deals with book collecting"	
13	https://openlibrary.org/	Books to Read, The World's classic literature at your fingertips. Over 1,000,000 free ebook titles available	
14	http://www.isbns.net/	compare New and Used Book Prices	
15	http://www.gutenberg.org/	Free ebooks by Project Gutenberg, some old chess books	
16	http://staff.library.mun.ca/staff/toolbox/bibcontr.htm	describes Library of Congress control number	July 2015
17	http://booksc.org/	scientific articles store	
18	https://www.hathitrust.org/	partnership of major research institutions and libraries	

19 online text editing, on-line useful tools

1	http://textmechanic.com/text-tools/basic-text-tools/remove-empty-lines/	removes blank lines from text files. works well	4/7/16
2	https://regex101.com/	online tool to test regular expression. Tell what matches, and why	12/2016
3	http://www.quickdiff.com/index.php	"An Online Tool to do a 'quick and dirty' diff of two text or code fragments"	

20 Text editors

1	http://www.slickedit.com/products/slickedit-core-for-eclipse/features-by-language	Slickedit. Nice editor main site is here	
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2	http://www.sublimetext.com/	Sublime text editor. see this for package control installation.	
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21 Color

1	http://www.cs.rit.edu/~ncs/color/a_spaces.html	nice Java applets to show color space, include HSV	
2	http://www.easyrgb.com	has equation to convert from different color models, see this page	
3	http://www.w3.org/TR/css3-color/	W3 page on color models	
4	https://www.ev1.uic.edu/costigan/S97/vslide4.html	SIGGRAPH 97, Video Formats, gives small description of all the color formats, YIQ, HSB, HSL, HSV, YUV, YDrDB, YCrCb. YPrPb	

22 cities, compare and places, apt rent

1	http://www.areaconnect.com/	Find area code of state, can also compare cities, like this http://everettwa.areaconnect.com/crime/compare.htm?c1=Everett&s1=WA&c2=madison&s2=WI	1/1/2015
2	http://www.bestplaces.net/compare-cities/	Sperling's compare cities site	1/1/2015
3	http://www.apartmentratings.com	Apts rating site	
4	http://www.expatistan.com/cost-of-living	compares cost of living between cities	
5	https://www.nerdwallet.com/cost-of-living-calculator/	another site to compare cost of living between cities	
6	http://www.apartmentratings.com/	Apts rating web site	
7	www.rentFROMoptimum.com	Web site for apts rent, mostly Wisconsin/MILWAUKEE area	
8	https://www.numbeo.com/cost-of-living/rankings_current.jsp	cost of living, citites around world, full table by numbeo.com	
9	http://www.highrises.com/building-directory	High rise apts directory	
10	https://realestate.usnews.com/places/rankings/best-places-to-live	US news page of ranking best places to live in the US	

23 Places for news on the net

1	https://news.ycombinator.com/	Hackers news, tech news related from everywhere	
2	https://news.google.com/	Google news	
3	http://video.ft.com/	financial times video news	
4	http://content.time.com/time/video/	Times video news	

5	http://www.bbc.com/	BBC news	
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24 Job search

1	http://www.indeed.com	indeed.com To compare jobs per skill	
2	http://www.glassdoor.com/index.htm	Job search site, has companies reviews also.	

25 Tools to convert HTML to pdf, pdf tools

1	https://code.google.com/archive/p/pdfopt/	”pdfopt is a program for converting large PDF files to small ones. More specifically, pdfopt is a free, cross-platform command-line application (for Linux, Mac OS X, Windows and Unix)	
2	https://docupub.com/pdfcompress/	free online tool to compress PDF	
3	https://smallpdf.com/compress-pdf	Another web site to compress PDF	
4	http://www.peregrinesalon.com/blog/2015/06/python-3-django-generating-a-pdf-from-markdown-or-html/	Blog shows how to use python to convert HTML to pdf. Have not tried it yet	

26 HTML5 simulation, Animated GIF, specific tools for simulation in HTML

1	http://www.simplehtmlguide.com/cheatsheet.php	HTML Cheat Sheet	March 2021
2	http://www.hongkiat.com/blog/on-click-animated-gif/	Blog article on how to add a button to reload/start a gif animation on page with many gif animations (but too many ads on the page!	sept 2016
3	http://stackoverflow.com/questions/20249401/onclick-play-gif-image-with-jquery-and-start-from-beginning	stackoverflow answer on starting gif animation with click	
4	http://docs.embed.ly/docs/tutorial-play-and-stop-gifs	Example showing hover mouse over static image to start animation	
5	http://www.codingforums.com/general-web-building/76916-stop-start-gif-animations.html	blog showing code to make start/stop for animated GIF. Need to try	
6	http://ctrl-freaks.github.io/freezejs/	jquery plugin for start stop animation. Looks nice	
7	http://stackoverflow.com/questions/5818003/stop-a-gif-animation-onload-on-mouseover-start-the-activation	question about stopping/starting GIF animation	

8	http://mathlets.org/javascript/build/heatEquation.html	heat PDE animation in javascript, part of MIT http://mathlets.org/ . all demos at http://mathlets.org/mathlets/	sept 7,2017
9	https://www.maa.org/sites/default/files/images/upload_library/55/steinertthrelkeld/canvas/canvas.html	"We describe methods for creating such tutorials using the HTML5 canvas element. First, we discuss some motivations for writing such mathlets, then walk-through the process of creating a mathlet with canvas. Then, we compare canvas to alternatives" contains nice examples of javascript and math applets. at end of pages links to 3D javascript demos	Sept 2017
10	https://www.w3schools.com/html/html_form_input_types.asp	HTML5 input types allowed	
11	http://danielcwilson.com/blog/2015/07/animations-intro/	Article by Dan Wilson on web animation API with examples and links. Called WAAPI	sept 2017
12	https://web-animations.github.io/web-animations-demos/	Live demos of web animation API	sept 2017
13	https://www.w3.org/TR/web-animations/	Web Animations W3C Working Draft, 13 September 2016	sept 2017
14	http://rachelnabors.com/waapi	Blog "Web Animations API: Resources, Talks, Tutorials"	sept 2017
15	https://www.csun.edu/science/software/simulations/simulations.html	Page that has links to HTML simulation on the net	Sept 2017
16	http://www.thephysicsaviary.com/Physics/Programs/Labs/	HTML5 based simulation	Sept 2017
17	http://physics.bu.edu/~duffy/classroom.html	HTML5 simulations at physics.bu.edu	Sept 2017
18	http://www.walter-fendt.de/html5/phen/	One of the better HTML5 simulations I've seen so far. walterfendt physics simulations, now in Javascript so could be run in the browser OK. Do not use the Java version since does not run in browser any more. Very useful apps.	April 2017
19	http://userwww.sfsu.edu/infoarts/technical/howto/wilson.javascript.exempls.html	Has small javascript examples to do some common things on page	Nov 24, 2017
20	https://developer.mozilla.org/en-US/docs/Web/Demos_of_open_web_technologies	Demos of open web technologies at Mozilla.org	Nov 24, 2017
21	https://davidwalsh.name/canvas-demos	9 Mind-Blowing Canvas Demos, Javascript	Nov 24, 2017
22	https://webflow.com/	Web flow, software for interactive web design. Did not try it, but looks cool.	Dec 2017

27 On Improving writing

1	https://jmlr.csail.mit.edu/reviewing-papers/knuth_mathematical_writing.pdf	PDF file. Mathematical Writing by Donald E. Knuth, Tracy Larrabee, and Paul M. Roberts. 1987	March 2021
2	https://divisbyzero.com/2008/09/16/the-nuts-and-bolts-of-writing-mathematics/	The nuts and bolts of writing mathematics. Posted by DAVE RICHE-SON on SEPTEMBER 16, 2008	March 2021
3	http://persweb.wabash.edu/facstaff/turnerw/Writing/writing.pdf	PDF file. A Brief Introduction to Mathematical Writing by William J. Turner	March 2021
4	https://www.enago.com/academy/we-vs-they-using-first-or-third-person-in-a-research-paper/	We vs. They: Using the First and Third Person in Research Papers	March 2021

28 Improving handwriting resources, and fonts resources

1	https://www.youtube.com/channel/UCFr-7WZVdGMH5eb5gOLug6A	OpenInkStand Art , Calligraphy channel at you tube https://www.youtube.com/watch?v=rIN1zjrrf_Y	
2	http://www.handwritingsuccess.com/	on italic and cursive writing. They have books, called Getty-Dubay Italic Cursive style. looped cursive vs. cursive italic.	
3	https://www.fontsquirrel.com	website to search and browse fonts	
4	https://www.fontspring.com/support/installing	Guide to installing fonts, also see https://www.fontsquirrel.com/help and see this on how to install fonts for the web site (not desktop)	