Benchmarks - April, 2015

Campus Computing News

Personnel changes in the HPC Services Team

By Dr. Philip Baczewski, Senior Director of Academic Computing and User Services and Deputy Chief Information Officer for University Information Technology

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Read more

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Read more

EDUCAUSE Annual Conference

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Read more

By the Numbers

Down the Corridor of Years

2012

Benchmarks Online publications from 2012 note:

- UNT implements Blackboard Learn 9.1 to replace Blackboard Vista.
- Sage Hall Learning Commons established.
- UNT drops support for Blackberry devices.
- John Hooper is named Vice Provost for Information Technology, and UIT reports to Academic Affairs.
- After 40 years in the ISB/Sycamore, ACUS offices move to Sage Hall.
- ACUS and Academic Affairs open an 136 station computer testing center in Sage Hall.
- Blackboard Vista is retired.
- UNT celebrates 50 years of computing.

Today's Cartoon

Click on the link above for an information age laugh.

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This month, we have been able to resolve some of our staffing issues. Charles Peterson, our most experienced research assistant on the HPC team, joined the team in a full-time capacity. Charles has an intimate knowledge of Talon and its subsystems as well as familiarity with many of the applications that are in frequent use. Newly joining the team will be John Pearson, research assistant, who, along with Wei Sun, will provide support and assistance to the HPC efforts.

While we continue the search for an HPC Services Manager, DaMiri Young will manage the day-to-day activities of the HPC Services Team. DaMiri has been with the HPC team since 2008 and was instrumental in the installation and configuration of our original Talon system in 2009 as well as in the support for and operation of Talon2. DaMiri will work to be sure that support requests receive as timely answers as possible and that the Talon system continues to operate nominally and provides a useful resource for our users.

As usual, please address any routine questions or concerns about the Talon HPC system to hpc-admin@unt.edu. You may also contact Philip Baczewski, D.M.A., senior director, UIT, at baczewski@unt.edu should you have questions or concerns of a more strategic nature.

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Data Management plans to be open and available to process exams:

May 9th Saturday 8:00 a.m. – 5:00 p.m.

May 11-15th Monday-Friday 8:00 a.m. – 8:00 p.m.

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- Registration/Housing Opens: **May 2015**
- Visit the conference website to register and to find out the latest information concerning EDUCAUSE's response to the controversial Religious Freedom Restoration Act (RFRA) legislation in Indiana. As of April 3, the website stated: While the legislation has been amended, EDUCAUSE will continue to work with Visit Indy and other local business leaders to ensure our Annual Conference in Indianapolis is free from discrimination and safe for all of our attendees. Please send any questions to Ron Zwerin, Director of Marketing and Communications.

Also, there are always the *EDUCAUSE Live!* Webinars

EDUCAUSE Live! is a series of **free**, hour-long interactive webinars on critical information technology topics in higher education. You can register for upcoming webinars and you can find recordings of **all past webinars** in the *EDUCAUSE Live!* archives.

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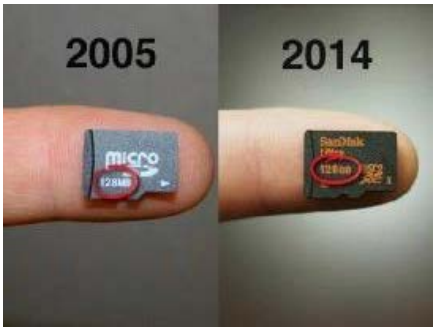
Network Connection

By Dr. Philip Baczewski, Senior Director of Academic Computing and User Services and Deputy Chief Information Officer for University Information Technology

Moore or Less



April 19, 2015 was the fiftieth anniversary of the establishment of "Moores Law", the idea that the number of transistors on a single computer chip would double every one to two years. This idea was first proposed by Gordon Moore, an early pioneer in the semiconductor industry who cofounded Intel, the company now responsible for most of the CPUs in modern desktop and laptop computers. Moore's law might have been prophesy or self-fulfilling prophesy, considering that Intel has played a large role over the years in the advancement of semiconductor technology and even has as its strategy a methodology to reduce the size of CPU chips for each time they improve the processing efficiency. Moore's law may also be seen as simply setting expectations for the technology market, with companies expected to keep up with the geographic upward curve of technology development or fall by the wayside, fading gently into technological obscurity (remember when Motorola manufactured one of the most powerful CPU's of its time?).

What has Moore's law done for us?

What has Moore's law done for us? It's brought us computers that are faster and smaller every couple of years. It's allowed for faster networks to connect those faster computers (network routers are just specialized computers.) It's allowed for the compilation of vast amounts of information that our currently fast computer servers can retrieve and present to us over our currently fast networks on our currently fast microcomputers or on our currently small and powerful smart phones. These improvements have likely seemed incremental to most people. We've been able to edit documents in Word for years, but we might not realize that these days, we're editing documents in Word, while letting our e-mail be delivered, while we have our web browser open, while we are in the middle of an online web meeting.

A more visible impact of Moore's law can be seen in the world of high performance computing (HPC). HPC systems, or supercomputers as they are sometimes called, are built to maximize the number of numerical computations that can be done at one time. Mostly used for scientific research (including here at UNT), HPC systems' performance rates are historically measured in the number of floating point arithmetic operations they can do in one second (FLOPS). Computing passed the billions of FLOPS (GFLOPS) in the bid 1980's with the introduction of the Cray-2 supercomputer. The Trillion FLOPS (TFLOPS) barrier was passed in 1999 and the Quadrillion FLOPS (PFLOPS) mark was reached in 2008. The next step will be Quintillion FLOPS (ExaFLOPS), but the fastest HPC system in the world today can only achieve about 33 TFLOPS. We'll need to increase the computing capacity by another 30 times to reach EFLOPS capability. Part of the gain in performance seen in HPC systems is due to faster and denser microprocessors and part is due to the creation of larger collections of computer servers working together.

Supercomputers are specifically designed to handle the computational tasks of scientific research, but its important to note that many of the same technologies that make up today's supercomputers are also used to drive the services of the likes of Google and Amazon. And we're seeing "smarter" computers start to inhabit our current culture. The one with the best press agent is "Watson", the computer built by IBM to be able to win the game show *Jeopardy!*. Well, perhaps that wasn't IBM's primary reason for creating Watson, but it was the event that brought the system to our attention. Watson's capacity is 80 TeraFLOPS, a little less, actually, than UNT's own Talon HPC system. But Watson is optimized for the retrieval and comparison of massive amounts of information within a human-style context. And it has proven itself by beating the best the human race can muster to the battlefield of *Jeopardy!*. Possibly less distinguished is Watson's foray into the culinary arts. Still, are computers becoming smarter than humans?

Are we heading down the path of human obsolescence?

Some would say we are already heading down the path of human obsolescence. The point at which technology becomes smarter than humans is sometimes referred to as a technological singularity. Following the curve of Moore's law, in a few years, perhaps the likes of Watson will be able to process even more information at a greater rate. But, intelligence is not just about information. It also requires an ability and application of creativity. Synthesis of new ideas is a creative process and not necessarily a strictly computational one. Computers have been shown to be creative, but the question remains as to whether the ability to create equates to an urge to create.

Aside from computers' current utility in the computational rather than creative domains, Moore's law seems to be in peril as well. Given the materials that currently make up semiconductors, manufacturers are approaching the limits of miniaturization possible using those materials. Perhaps we are headed to the single-atom transistor, but once we get there, we can't go smaller and only new kinds of technologies will enable smaller and faster computers. Perhaps humans can forestall their inevitable computer overlords for a bit longer.

When talking about computing progress, I often point out that my smart phone has the power of a 1980's Cray supercomputer. It turns out that it's more like a late 1990's supercomputer. IBM's Deep Blue computer is know for beating world chess champion Garry Kasparov in a six-game match in 1997. Weighing in at 11.38 GFLOPS, Deep Blue turns out to have been much less computationally capable than my 142 GFLOPS Samsung Galaxy S5. But instead of being dedicated to just playing chess, my smart phone can get my e-mail, show me photos and videos, play my music, accept text messages, and let me transact commerce over the Internet. And, with a link to Google, a world of knowledge is literally in the palm of my hand. Am I smarter with my smart phone? Maybe. Am I worried about my phone someday being smarter than me? No. Just like the rest of human history, I think that humans will master the tool and not vice versa. After all, we've figured out how to use fire without burning down the house -- most of the time.

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Link of the Month

Thank A Teacher

Students can say "Thanks" via the "Thank a Teacher" Program through May 8, 2015. Outstanding teachers at UNT do make a difference for students. They make learning challenging and fun; they are available when needed; and they weather many storms with students to foster bright futures. When teachers have made this kind of a difference, many students wish for a way to say “Thanks”.

If you would like to "Thank a Teacher" this semester, complete the form at http://thanks.unt.edu. **The site remains open all year for submissions but letters are processed and sent to faculty only at the end of each long semester.** Student notes will be sent to their teachers as part of a letter of recognition from the Provost once final grades have been submitted for the semester!

Students may complete as many of these forms as they wish (one for each teacher they wish to thank). They may also choose to remain anonymous. Their notes will be sent to their teachers as part of a letter of recognition from the Provost once final grades have been submitted for the semester!

thanks.unt.edu

Please contact Nancy Fire at nancy.fire@unt.edu with any questions you may have about the program.

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Helpdesk FYI

By Jacob Flores, UIT Support Services Manager

Google Chrome drops NPAPI plugin support

Introduced in 1995, NPAPI is seen as the first major resource for developers to extend use of web browsers in creating browser plug-ins. Many popular plugins were created using NPAPI, such as Oracle's Java Runtime Environment, Microsoft Silverlight, and Adobe Flash Player. As technology progressed, alternatives to NPAPI were created: PPAPI and HTML5 can deliver similar experiences and are seen to be more secure and portable. For instance, as of January 2015, Netflix dropped use of Silverlight in favor of HTML5, and YouTube decided to default to the HTML5 player instead of using Flash.

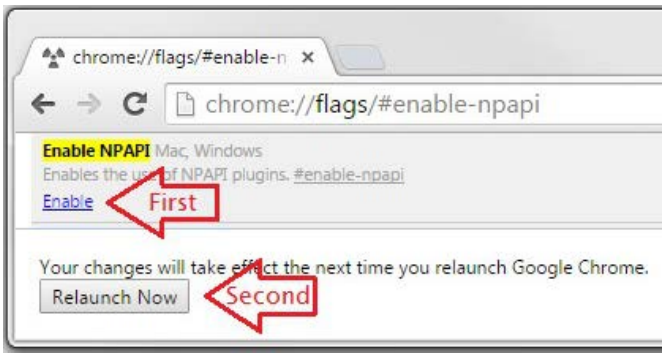
In 2013, Google announced they'd be phasing out support for NPAPI plugins in Chrome over the following year. Google Chrome 42 was just released this April 2015, and NPAPI is now disabled by default. This is a step forward in encouraging use of newer options, but may cause trouble for Chrome users who need to use NPAPI plugins in the meantime. For instance, users of WebNow and Blackboard here at UNT may still need to use the Java plugin.

The Google Chrome developers plan to permanently remove NPAPI support in the September 2015 release of Chrome 45.

Enabling NPAPI plugin support for Google Chrome

Fortunately, for the time being, enabling NPAPI support in Chrome takes just a few clicks.

1. With the Chrome browser open, enter the following into the address bar: chrome://flags/#enable-npapi
2. Click on the **Enable** link under the Enable NPAPI section
3. Click the **Relaunch Now** button now found at the bottom



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RSS Matters

R_stats

Research and Statistical Support
University of North Texas

Time Series Analysis: Basic Forecasting.

Link to the last RSS article here: Confirmatory Factor Analysis and Structural Equation Modeling Group Differences: Measurement Invariance. -- Ed.

By Dr. Jon Starkweather, Research and Statistical Support Consultant Team

This month's article will provide a *very* gentle introduction to basic time series analysis. The primary reference for this article is Hyndman and Athanasopoulos (2015) and it is highly recommended, not least because it is completely free and regularly updated at OTexts. If you are unfamiliar, there is a growing group of academics and researchers using www.OTexts.org [Online, Open Access Textbooks] to remove barriers to learning – a most honorable endeavor. The book by Hyndman and Athanasopoulos also has a companion R package; 'fpp' (Hyndman, 2013) which, obviously, makes working through the examples presented in the book much easier.

As with any introduction, this one includes some necessary notation and terms which must be defined prior to actually learning any of the data analysis techniques. Say we have a vector of time series data, y, and there are nine values in this time series (t = 9). The most recent value is referred to as y_t and the last value as y_{t-8}. Continuing the notation, y_{t+1} is used when referring to a forecast value (i.e. the predicted next value of the time series). Next, there are a few terms worth noting. The term *trend* refers to a general pattern (e.g. increase or decrease) in the time series over the course of the series. Hyndman and Athanasopoulos (2015) define a trend as the following; "a trend exists when there is a long-term increase or decrease in the data" (p. 28). The term *seasonal* refers to patterns in the series which occur at regular intervals (e.g. season of the year, semesters of an academic year, days of the week, or even times of a day). Another term widely used is *cycle*, which "occurs when the data exhibit rises and falls that are not of a fixed period" (Hyndman and Athanasopoulos, p. 28). Basic time series are conceptually composed of either an additive model:

$$y_t = S_t + T_t + E_t$$

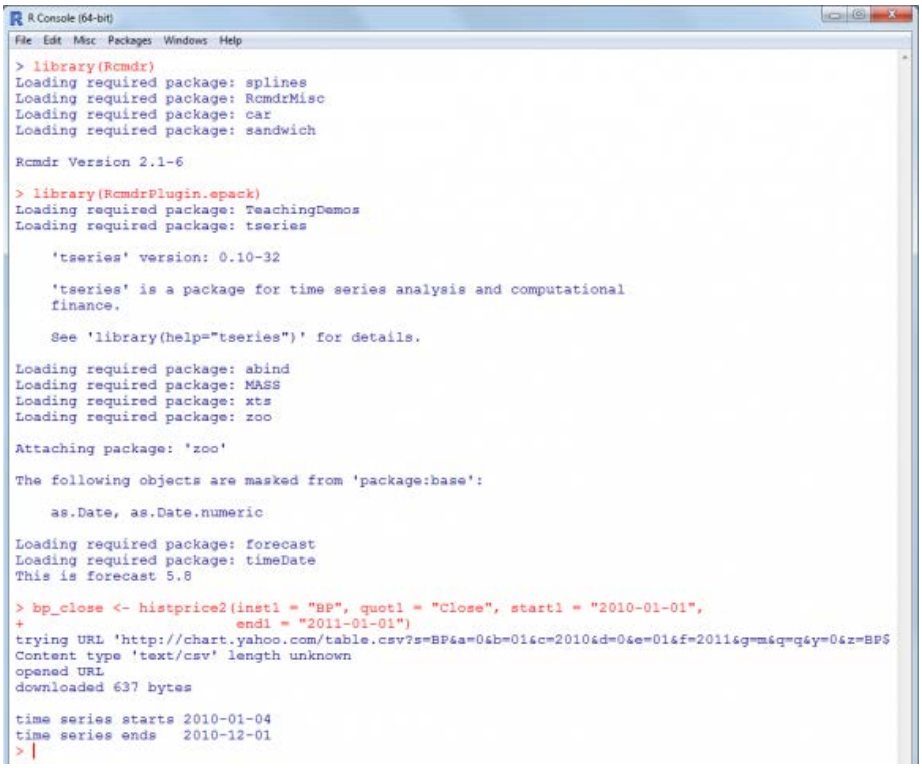
or a multiplicative model:

$$y_t = S_t * T_t * E_t$$

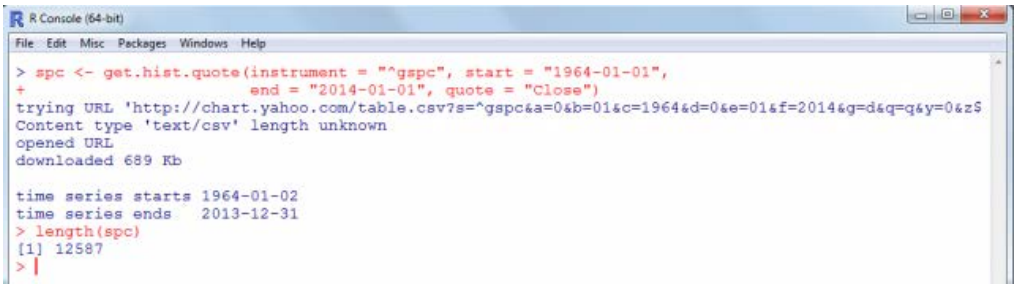
In both models, the y_t is the data at period t, S_t refers to the seasonal component at time t, the T_t refers to the trend (or cycle) component at time t, and the E_t refers to everything else (i.e. error) at time t. Hyndman and Athanasopoulos (2015) state that "the additive model is most appropriate if the magnitude of the seasonal fluctuations or the variation around the trend (or cycle) does not vary with the level of the time series" (p. 147). Alternatively, Hyndman and Athanasopoulos state that "when the variation in the seasonal pattern, or the variation around the trend (or cycle), appears to be proportional to the level of the time series, then the multiplicative model is more appropriate" (p. 147 – 148).

Below we will be using R Commander (package: 'Rcmdr') and the epack R Commander plugin (package: 'RcmdrPlugin.epack'), as well as one of the main time series packages (package: 'tseries'). Keep in mind, the R Commander package has several dependent packages; as does the epack plugin (including package: 'tseries'). The examples will be using monthly average stock price for BP PLC from January 1st, 2010 until January 1st, 2011. If you

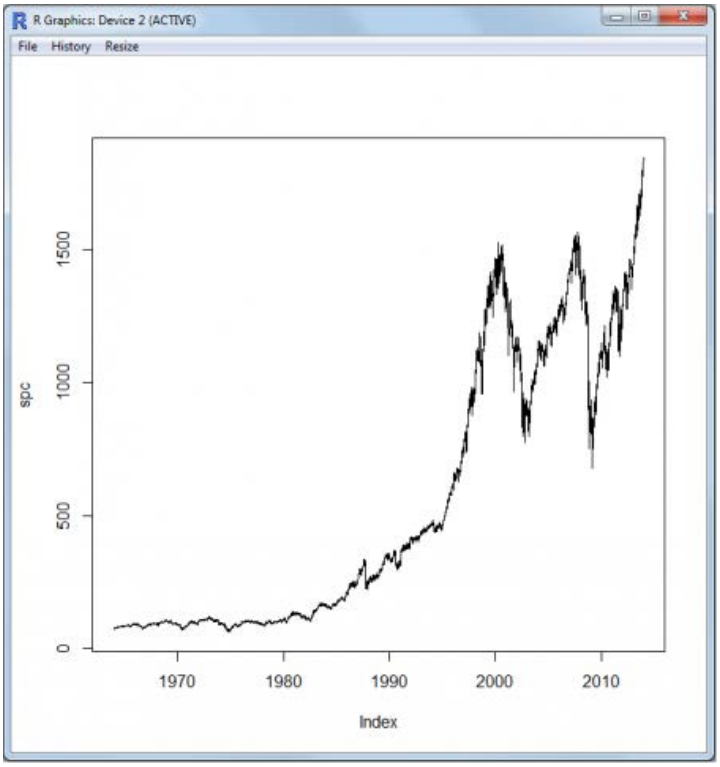
are wondering why only these 12 data points were chosen, please see here. Below we load R Commander and the epack plugin so we can import the data from Yahoo Finance. The function used to retrieve the data is the 'histprice2' function from the epack plugin.



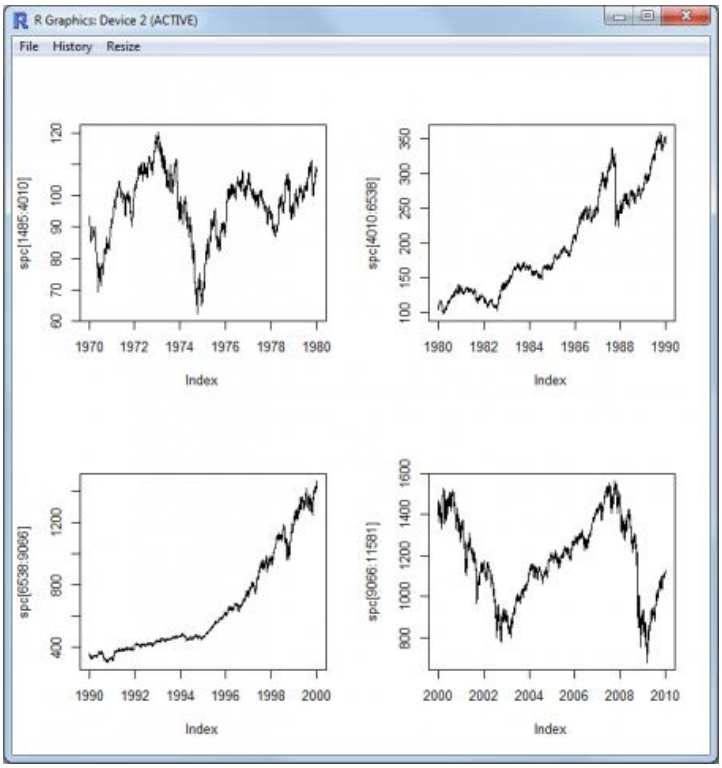
It is worth noting that the 'histprice2' function is actually calling a function from the 'tseries' package called 'get.hist.quote' which; by default, uses Yahoo Finance data. This is important because although we are using monthly stock prices, the 'get.hist.quote' function is capable of retrieving daily historical data. As a quick example, consider the data imported below which contains the daily closing price of the S&P 500 from January 1964 until January 2014.



It is generally a good idea to begin with a graph of the data, while keeping in mind those terms from above (e.g. trend, seasonality, cycle). First, take a look at the S&P 500 data.

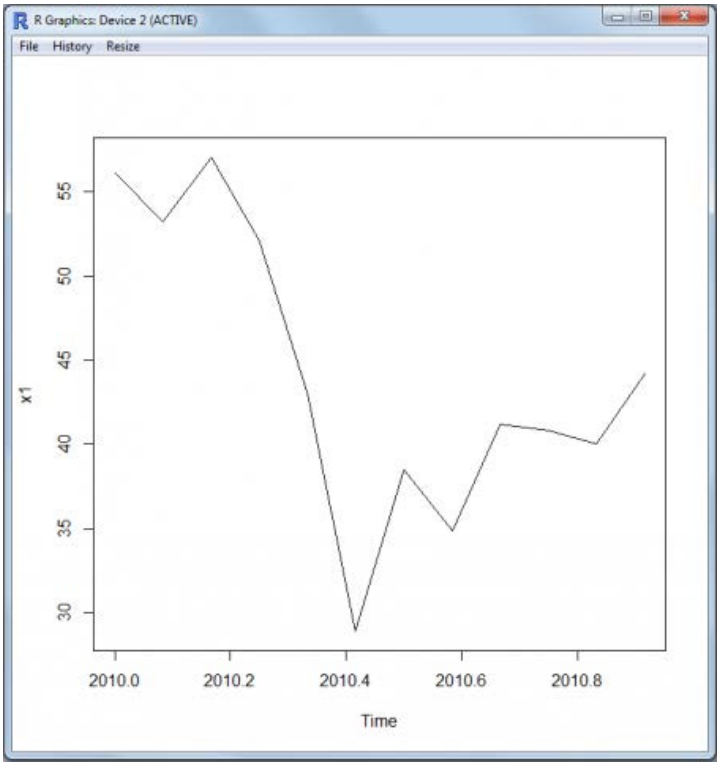


Now imagine you were attempting to forecast where the S&P 500 would be if you were in 1980. You would likely have very narrow prediction intervals (similar to confidence intervals). Contrast those imagined intervals with the intervals you would imagine based on the complete data in the graph, with those two ominous bunny ear spikes…very foreboding. Do you see any trends, seasonality, or cycles in the series? One way to get a better idea of those types of patterns is to plot segments of the data, only one decade at a time perhaps using four decades.



As you can see above, there does not seem to be any discernible patterns among the four segments. Of course, part

of the problem above is that each of the four panels has a different y-axis scale; which means they are not directly comparable in terms of the variance in each series displayed. We could remedy that by forcing each graph to have the same scale, but let's turn our attention to a much smaller series of data; BP PLC average closing stock price for each month in 2010.

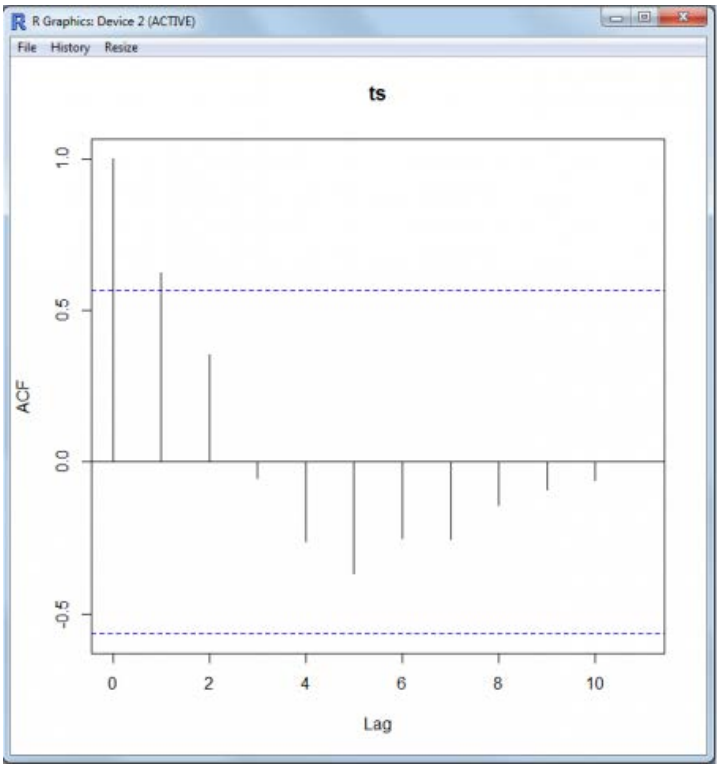


In the above graph we can see the stock price dropped nearly half its value between March and June. Most analysts likely would have predicted BP's stock to stay between $50 and $60 throughout 2010 – even when using complex multivariate models which will not be covered here. However, on April 20th, 2010 the Deepwater Horizon oil rig exploded and thus began one of the worst petroleum related oceanic environmental disasters. The point in highlighting this particular data set is to remind all of us that no matter how sophisticated the model, there is always uncertainty. Statistics is a tool for helping to make informed decisions in the presence of uncertainty; but models are not reality and no model is perfect. However, the more data available and analyzed; the less uncertainty one is likely to have in estimates resulting from a model. As the current article is to be an introduction, let's return to some of the more basic concepts of time series analysis.

Autocorrelation

Autocorrelation can be considered a measure of the momentum of a time series. In most time series, it is reasonable to suspect that the most recent data points are likely to contribute most influence on the next (i.e. future) data point. Autocorrelation is a type of correlation statistic specifically for correlating the most recent data point to other data points in the series. Recall, the most recent point is notated y_t and subsequently older points labeled y_{t-1}, y_{t-2}, y_{t-3}...y_{t-k} (where $k = t - 1$). The maximum number of autocorrelations calculated is one minus the number of data points (i.e. k). Each autocorrelation represents a different *lagged value* – which refers to the number of points between the most recent data and the older data. Our BP data contains 12 values and therefore we can compute 11 autocorrelations (r_1, r_2, r_3, ... r_{11}). Graphing is generally the preferred method of inspecting the autocorrelations of a time series. The function used is simply 'acf' and by default it produces the desired graph. However, we can simply print the autocorrelations by changing 'plot = TRUE' (the default) to 'plot = FALSE' as seen below. One can also get the partial autocorrelation by specifying 'type = "partial"'.

```
R Console (64-bit)
File  Edit  Misc  Packages  Windows  Help
> acf(bp_close, lag.max = 11)
> acf(bp_close, lag.max = 11, plot = FALSE)

Autocorrelations of series 'bp_close', by lag

     0      1      2      3      4      5      6      7      8      9     10
 1.000  0.624  0.353 -0.051 -0.263 -0.367 -0.251 -0.254 -0.141 -0.091 -0.058
    11
 0.000
> |
```



The blue dotted lines, in the plot above, represent a default confidence interval of 95% (i.e. 'ci = 0.95') which can be changed with the 'ci' argument (e.g. 'ci = 0.80' for 80%).

Stationarity and Non-Stationarity

An important concept in time series analysis is stationarity and particularly the recognition of non-stationarity in a particular time series. Stationarity refers to the idea that the time series fluctuates around a constant mean and the variance around that mean remains constant. As one might expect, most time series exhibit non-stationarity; in other words, most time series do not fluctuate around a fixed mean and they do not fluctuate uniformly. Fortunately, there is a function available in R to test for stationarity; the Kwiatkowski, Phillips, Schmidt, and Shin (KPSS; 1992) test for the null hypothesis that the time series is level or trend stationary. Using the 'kpss.test' function actually requires running the function twice; once to test if the series is level and once to test if the series displays trend.

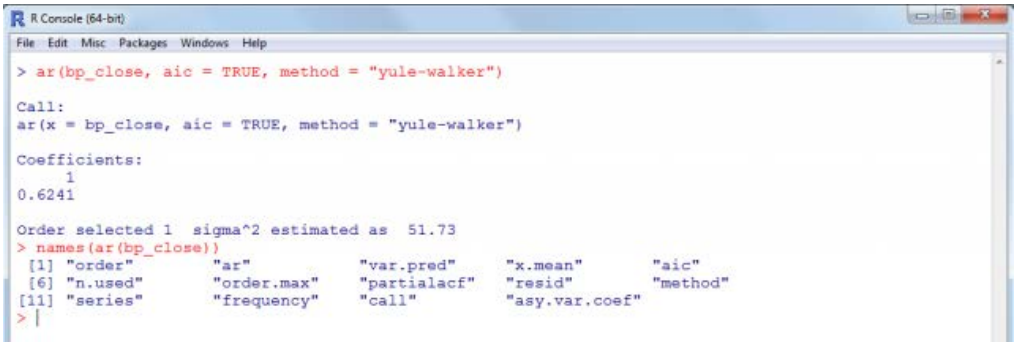
```
R Console (64-bit)
File  Edit  Misc  Packages  Windows  Help
> kpss.test(ts(bp_close), null = "Level")

        KPSS Test for Level Stationarity

data:  ts(bp_close)
KPSS Level = 0.6274, Truncation lag parameter = 0, p-value = 0.02014

> kpss.test(ts(bp_close), null = "Trend")

        KPSS Test for Trend Stationarity

data:  ts(bp_close)
KPSS Trend = 0.2159, Truncation lag parameter = 0, p-value = 0.01003

> |
```

Both tests above indicate our time series is non-stationary (i.e. both *p*-values are less than 0.05); which indicates our series does not vary uniformly and does not vary around a constant mean. When a series is non-stationary (as the tests above indicate is the case with our example), then forecasting is much more difficult. However, a *differencing operation* can be used to transform a non-stationary series into a series where the assumptions of stationarity are met. For example, with the above result we would apply a $d = 1$ differencing operation first and then apply the KPSS

tests to the resulting differences. The differencing operation simply takes the difference between each time datum (*d* = 1), or the difference between each other datum (*d* = 2), etc. If the resulting differenced time series shows stationarity (i.e. *p* > 0.05) then the models discussed below (e.g. ARIMA) are appropriate. The differencing operation is not used here due to the space and scope constraints of this document.

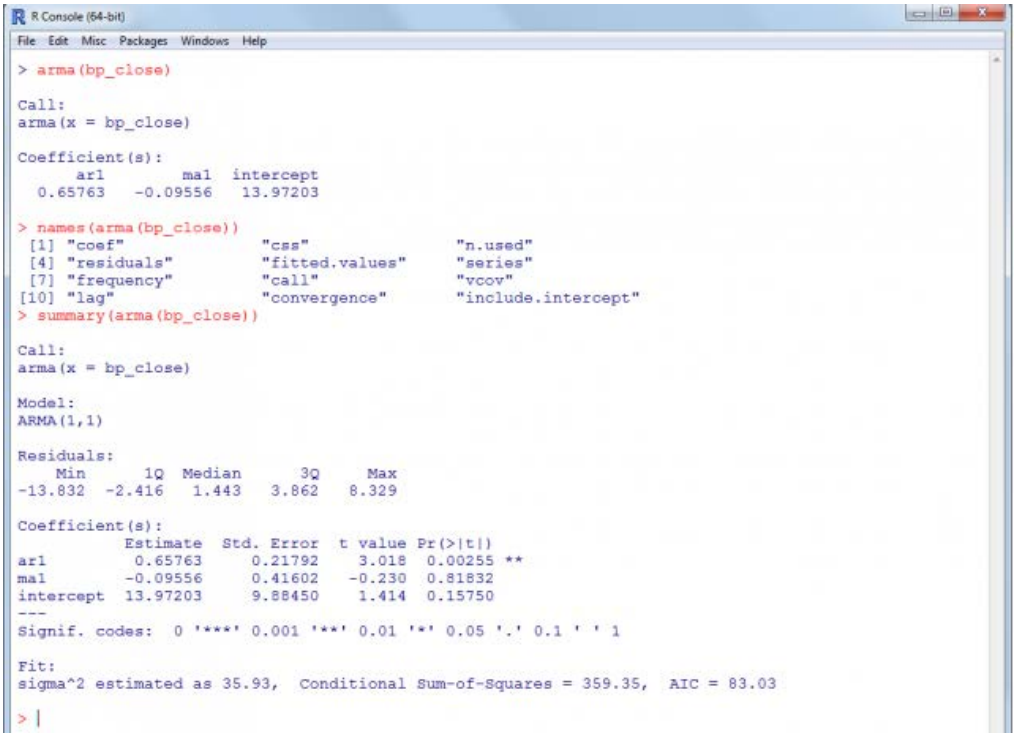
Auto-Regressive Model

The Auto-Regressive model (AR) is nothing more complex than a linear regression model for time series. The AR model essentially assumes the current time point datum is linearly related most to the previous point and subsequently less to each previous time point as specified in the model. When specifying an AR model, you must specify the *order* which indicates how many lags to use. The function for fitting an AR model in R is simply 'ar(data)', as can be seen below with no order specified – by default the order is 1 (i.e. AR-1). In the example below, the 'names' function is used to display the named objects which are returned by the 'ar' function. Of particular use is the 'partialacf' which returns the partial autocorrelations (simply type: "ar(bp_close)$partialacf" into the console to return these values). Also typically informative are the residuals of the model (simply type: "ar(bp_close)$resid" into the console to return these values); larger residuals indicate poorer fit.



Autoregressive-Moving-Average Models

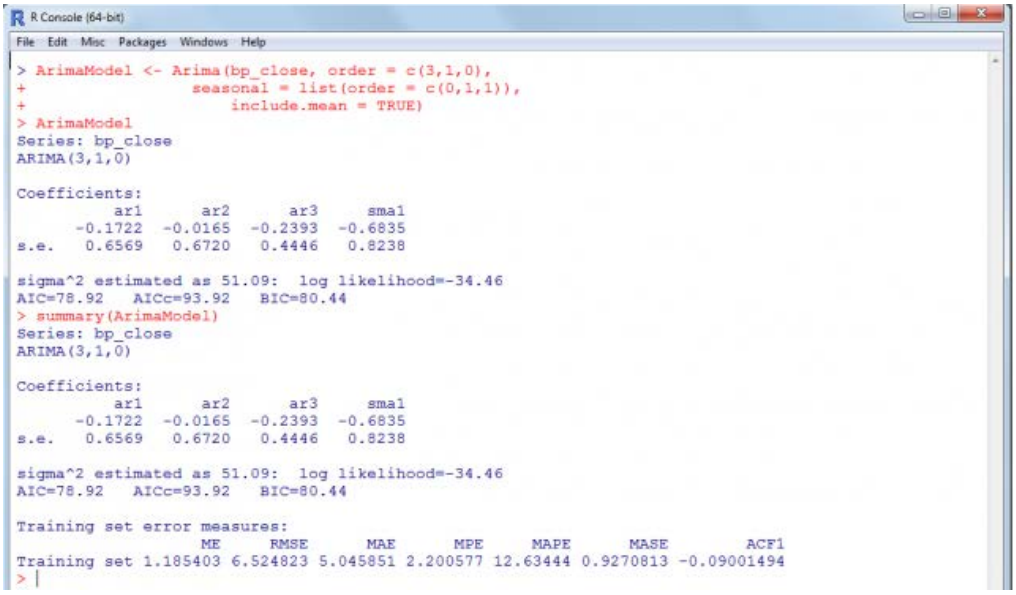
Autoregressive-moving-average (ARMA) models are based on two polynomial functions; one for the autoregression (AR) and a second for the moving-average (MA). The basic function for fitting an ARMA model to a univariate time series is simply the 'arma' function as demonstrated below. Again, the function defaults to specify AR-1 and MA-1; order one (AR) and order two (MA) which reflect the lag periods for each component of the model.



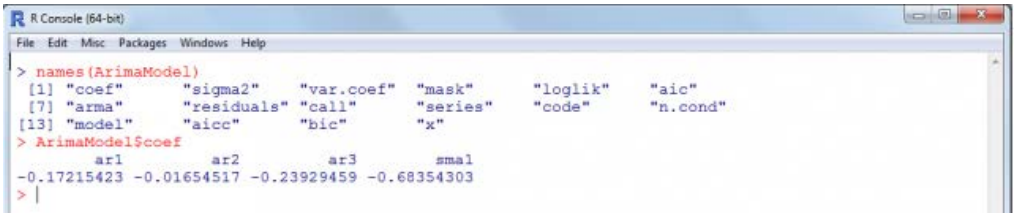
As can be seen in the summary above, only the autoregressive portion of the ARMA model is significant. As should be expected; the autoregressive coefficient is fairly close to what was observed in the AR model from the previous section.

Autoregressive Integrated Moving Average Models

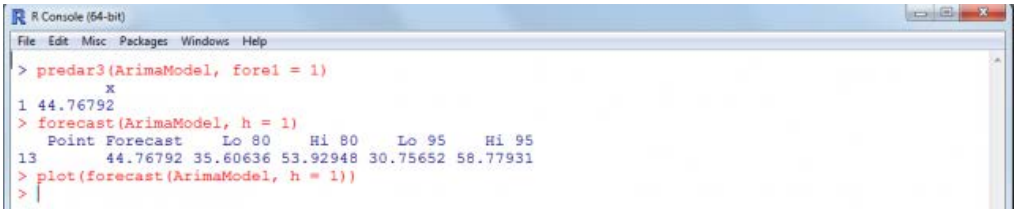
The autoregressive integrated moving average (ARIMA) model is an appropriate choice (over the ARMA model) when non-stationarity is suspected or observed in the time series. The application of the 'Arima' function below has default values specified for the arguments. The 'Arima' function is supplied the time series data and two other components can be specified. The 'order' – which is the non-seasonal part of the ARIMA model, the three components (p, d, q) are the AR order, the degree of differencing (to correct for non-stationarity – as discussed at the beginning of this document), and the MA order. The 'seasonal' argument allows one to specify the seasonal part of the ARIMA model, plus the period (which defaults to frequency(x)). This should be a list with components order and period, but a specification of just a numeric vector of length 3 will be turned into a suitable list with the specification as the order.

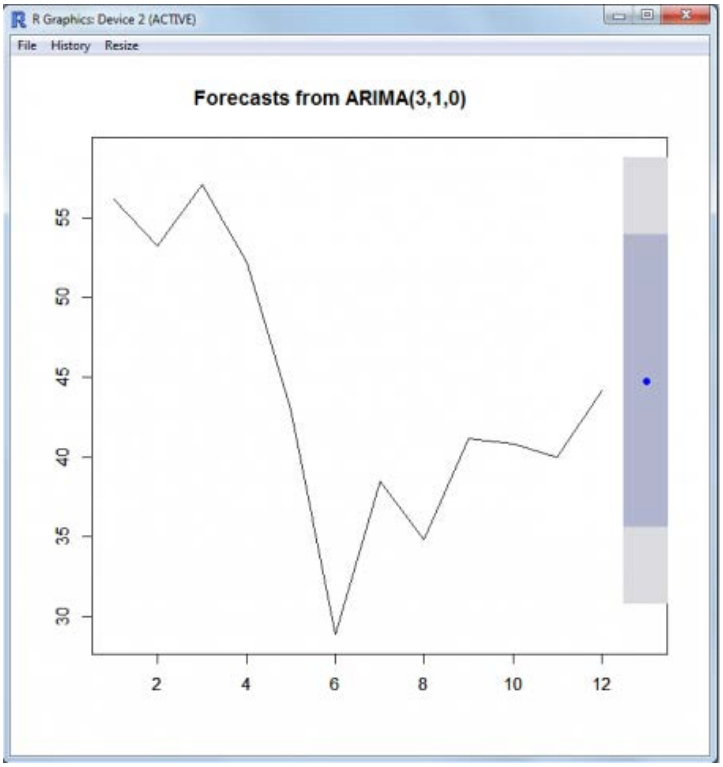


The output provided by simply listing the output object or retrieving a summary of the output object provides the basic information; primarily the coefficients (and their standard errors [s.e.]). To see all the elements of the output, in case one wanted to extract specific parts of it for further computation; we can use the 'names' function and then index each element with the '$' and name.



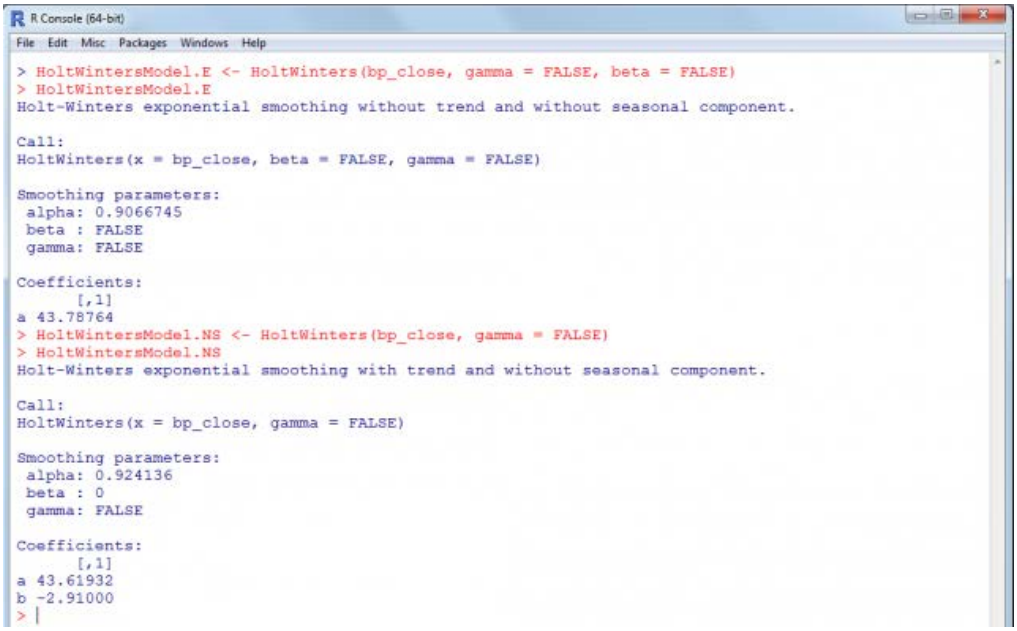
We can also apply some functions to use our ARIMA model to forecast predictions providing an estimate of the expected next time series point(s) and show that prediction graphically. The 'forecast' function provides 80% and 95% confidence intervals as well as a point estimate. Both functions used below are requesting only one time point ahead predictions; however, both functions are capable of forecasting multiple future time points.





The rather large interval (shaded area) around the point estimate is reasonable given the rather large fluctuation of the existing series (i.e. the drastic decrease in price once the oil spill was made public). In the graph above, the blue shading represents the 80% confidence interval, while the gray shading represents the 95% interval.

There also ways of filtering the time series. Below the series is filtered with exponential smoothing and then (separately) filtered as a non-seasonal model.



Lastly, much of the above has been covered on the RSS Do-it-yourself Introduction to R web site and specifically here in Module 10.

Until next time, *why are you wearing that stupid man suit?*

References & Resources

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Training

By Claudia Lynch, *Benchmarks Online* Editor

Do you need training on widely used computer programs including those used in statistical analysis? If so, this monthly *Benchmarks Online* column is for you.

Statistical Analysis

Instructor-led courses are offered only by special request. Please contact an RSS member or Claudia Lynch if you are interested in taking such a class or wish to have someone offer a class for your students. **SAS, SPSS** and **Introduction to R are offered online**. Make sure and check out the recent **RSS Matters** article *Statistical Resources (update; version 3)*.

Special classes can always be arranged with the RSS staff. Also, you can ***always*** contact the RSS staff for one-on-one consultation. **Please read the FAQ before requesting an appointment though.**

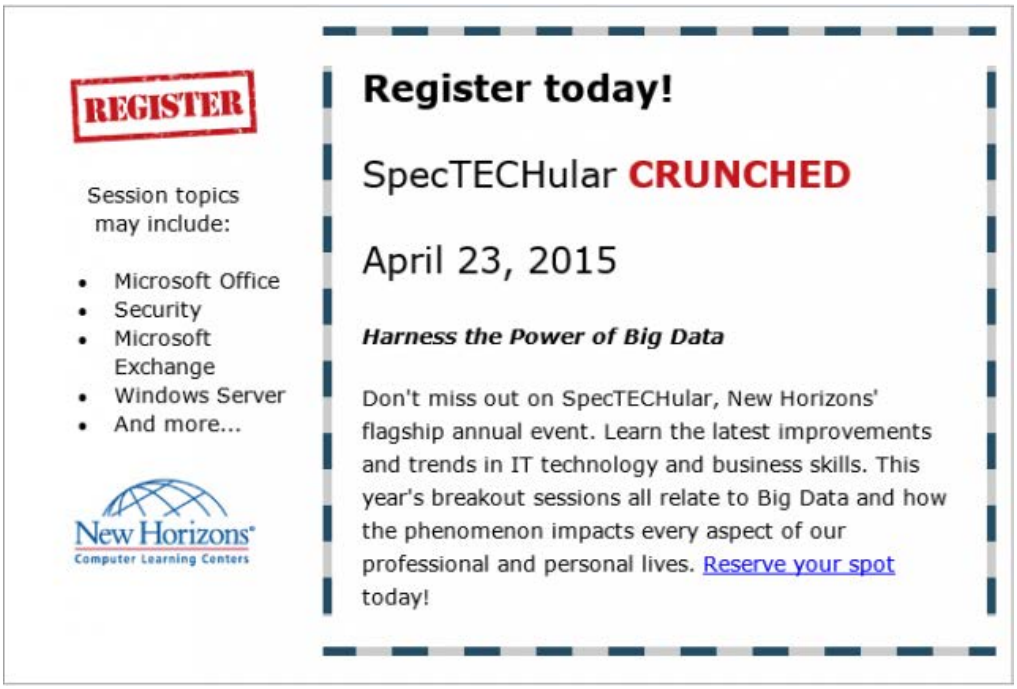
Especially for Faculty and Staff Members

In addition to the online statistical courses, which are available to students, faculty, and staff, staff and faculty members can take courses offered through the Business Service Center, and the Center for Learning Enhancement, Assessment, and Redesign (CLEAR). Additionally, the Center for Achievement and Lifelong Learning (CALL) offers a variety of courses, usually for a small fee.

The Business Service Center has recently centralized their business process training for things like payroll, time and labor, and travel.

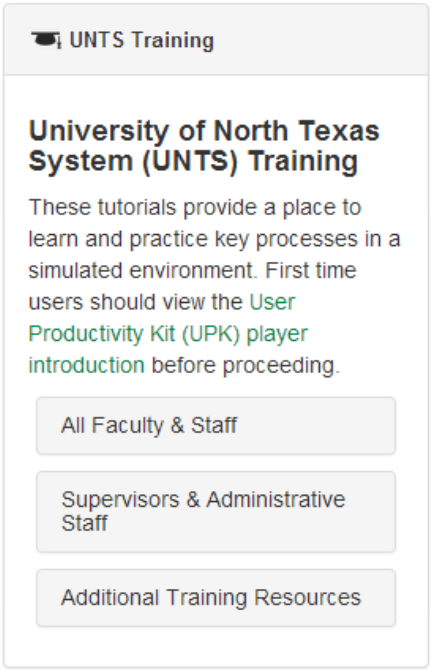
Check out the Office 365 training resources that are now available online.

Register ** TODAY ** for:



UNT System Training Resources

Visit my.unt.edu and login to access tutorials.



Microsoft Virtual Academy

Who is eligible to participate in MVA?

- Anybody interested in growing their career can be a part of MVA.
- To sign up for MVA , on the MVA home page, MVA courses and events are free, but you need to identify yourself using a Microsoft account in order to sign up for MVA and create your MVA profile.
- There is no minimum level of technical expertise required.

Microsoft E-Learning

Updated instructions for accessing Microsoft E-Learning are below.

As part of an offering from Microsoft, you are eligible to access E-Learning courses online at Microsoft.com. These courses are meant to help you keep up-to-date with the latest major software releases.

Please note that some product and language versions may not be available at the time you activate your courses. For up-to-date information on the availability of E-Learning courses, please visit http://microsoft.com/licensing.

To gain initial access to the Microsoft® E-Learning courses, please follow the steps below:

1. Go to: https://onlinelearning.microsoft.com/subscriptionactivation/.

2. Input your multiuse access code: Contact Claudia Lynch or your Network Manager for the code *(The code is case-sensitive. Be sure to include the dashes and do not enter any spaces.)*

3. You are prompted to sign in using a valid Windows Live™ ID. (This is the user name and password you use to access the site each time you log on.) If you already have a profile on microsoft.com, use that Windows Live ID.

4. You will receive an e-mail confirming your registration.

5. From the confirmation e-mail, click the link to complete the e-mail confirmation and activate your courses.

6. You are prompted to sign in using a valid Windows Live ID, once again.

7. A confirmation page appears indicating that the access code has been accepted (or you may receive an error message if the code was not accepted).

8. Click the *My Learning* link to see list of available courses.

9. Click a course title to launch the offering. You have 12 months from the time of launch to finish that course.

Follow the instructions below to access E-learning until you arrive on the "UNT System authenticated service Page."

To access your course at any time, please follow these steps:

1. Go to: https://onlinelearning.microsoft.com/.

2. Click the "Sign In" button in the upper right corner of the page.

3. Sign in to Windows Live using your Windows Live ID and password.

4. Click the My Learning Catalog link on the left side of the page under Customer Login.

5. Begin your E-Learning course.

If you have any questions regarding your access code, you may e-mail or phone our support center. To view a list of support phone numbers, please visit https://www.microsoft.com/licensing/servicecenter/ and click the **Support/Feedback** link.

If you experience any problems with your E-Learning training, please contact the regional support center in your region at http://www.microsoft.com/learning/support/worldsites.mspx.

We trust you will enjoy this benefit and look forward to your participation. Please note that the access code we have received from Microsoft can accommodate a limited number of users from our organization. Do not share the code with unauthorized users. This is not permitted under our license agreement with Microsoft.

Microsoft E-books

Click on the link and access the largest collection of FREE Microsoft eBooks ever, including: Windows 8.1, Windows 8, Windows 7, Office 2013, Office 365, Office 2010, SharePoint 2013, Dynamics CRM, PowerShell, Exchange Server, Lync 2013, System Center, Azure, Cloud, SQL Server, and much more!
NOTE: How to enable 'Download All' for Free Microsoft eBooks and other tips

Central Web Support

Central Web Support provides "web hosting and support to appropriate campus entities free of charge."

CLEAR

CLEAR offers courses especially for Faculty Members. *CLEAR training includes:*

- Blackboard
- Turnitin
- Turning Point
- Assessment
- Teaching Effectiveness
- Respondus

Please check out CLEAR's training and event calendar at http://clear.unt.edu/calendar for the latest information regarding Blackboard, CLEAR's initiatives, and on campus instructional events.

Further information can be found here.

FREE Online Learning Consortium Workshops

The University of North Texas is a premium member of the Online Learning Consortium (formerly the Sloan Consortium) College Pass. To request FREE ENROLLMENT in an Online Learning Consortium workshop, please contact Amber Bryant with the name and date of the workshop selected. *Please click on the link below to see the available 2015 workshops.*

- Online Consortium 2015 Workshops

CLEAR also provides free access through group subscriptions for ALL Denton UNT faculty and staff to **Magna Commons, 20 Minute Mentor Commons, Distance Education Report, Online Classroom,** and **The Teaching Professor** from **Magna Publications.**

Ed2go

Ed2go are courses that are offered, for a fee, to UNT faculty, staff and students as well as the general public. The CALL website states:

> *Make UNT the first place you turn for career training and professional development. UNT's Online Minicourses, provided in conjunction with Ed2go, are downloadable 12-lesson modules that are designed to meet your needs for skill development. Lessons are instructor-led and course participants and instructor communicate through a course discussion board.*
>
> *Most courses are $89 and UNT faculty, staff and students may receive a $10 discount. Contact Tami Russell (940.565.3353) for more information.*

For additional information, visit the **Ed2go blog** here. You can subscribe to their newsletter also from a link at the bottom of the page.

Information Security Awareness

Information Security Awareness -- The ITSS Information Security team offers Information Security Awareness training to all UNT faculty and staff.

- It is a policy requirement that ALL staff take an information security course at least once a year.
- See the Virus Information Page and the Information Security Handbook -- for Faculty, Staff and Students for further information.

UNT HR Training and Development

As noted on their website:

> *Monthly emails are sent to all employees with a list of current classes, many available by webcast. (Note: Few, if any classes are offered during the winter break, spring break holiday periods for all UNT System campuses.) Learn more about classes here.*
>
> *If you have questions or specific needs, contact talentmanagement@untsystem.edu or call 855-878-7650 to be directed to a Talent Management staff member.*

Alternate Forms of Training

Many of the General Access Labs around campus have tutorials installed on their computers. See http://computerlabs.unt.edu/ for a list of labs and their locations. The 24 Commons in Willis Library, for example, has a list of Tutorials and Software Support. The Library Instructional Unit also offers workshops and training, including "tech skills" training. Visit their websites for more information: http://www.library.unt.edu/library-instruction.

Info~Tech, UNT's IT Research Partner

Info~Tech is UNT's IT research partner. UNT System, UNT, UNT Health Science Center and UNT Dallas employees have access to Info~Tech research at: www.infotech.unt.edu (click on the UNT System name to login). Your standard EUID and Password gains you access to the Info~Tech system. Please take a moment to read their terms and conditions by clicking through the agreement when you set up your profile the first time you log in.

State of Texas Department of Information Resources

Another possible source of training for staff and, perhaps, faculty members is the Texas Department of Information Resources. Search their website for the specific training you are interested in.

New Horizons Computer Learning Centers

New Horizons is a DIR vendor, which means that state agencies, like UNT, get special pricing for their services negotiated at the State level (click here for more information about DIR vendors). New Horizons offers courses at their own facilities in Dallas and Fort Worth, but will arrange for onsite training as well. They have a "Tips and Tricks" page that has helpful information. You can also join their mailing list to receive their monthly newsletter, event invitations and specials.

EDUCAUSE Live! Webinars

EDUCAUSE Live! is a series of **free**, hour-long interactive webinars on critical information technology topics in higher education. You can register for upcoming webinars and you can find recordings of **all past webinars** in the *EDUCAUSE Live!* archives.

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- UNT Health Science Center

Site last updated on April 22, 2016

Staff Activities

Staff activities for UIT are reported in this column.

New Employees:

- **Charles Peterson**, IT Manager, Research Computing Support.
- **Michael King**, Classroom Support Services (part-time).

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Today's Cartoon

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