NX Expressions for Smarties

Covers all current versions in 38 exercises

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About the Author

Stephen M. Samuel PE, Founder and President of Design Visionaries, has over 26 years’ experience in developing and using high-end CAD tools and mentoring its users. During a ten-year career at Pratt & Whitney Aircraft, he was responsible for implementing advanced CAD/CAM technology in a design/manufacturing environment. After founding Design Visionaries he has trained thousands of engineers in Unigraphics, written self-paced courses in UG/NX Advanced Modeling and Best Practices, and performed design work for numerous Fortune 500 companies. Stephen is the author of distinctive publications on NX Nastran, UGNX CAD, Sold Edge, SolidWorks, and TeamCenter Engineering PLM. Stephen holds several US patents and enjoys a life of creativity and intellectual challenge in the city of San Jose, CA. He happily shares his life with three amazing children, his best friend wife and an 81 year old powerhouse of a mother that lives in her home right next door.

Hey! What can I say? I’m a nerd who really loves to design and build stuff. I also love to share what I’ve learned. Hope you enjoy.
Special Thanks:

To Landon Ritchie: Thank you for the cover art, editing, file conversion, content and constant support. Thanks for being an incredibly fast learner and a friend. Thank you to all the other people who read this and made copious suggestion and criticism.

Thank you to Taylor Anderson from Siemens who helped with accuracy and content—an awesome hard core nerd. And thanks to Siemens for overall support.

Thank you to my incredibly supportive family without whom all of this would be impossible.

Special thanks to the United States of America and all those who built it and fought for it including the public schools that were instrumental in allowing me such a rich opportunity.
About this course

Welcome! This course on the expressions language in NX has been written for engineers by engineers who love this stuff. We did it knowing that you’re probably very busy. That said, we’ve made this course very hands-on and streamlined. Most of this course is made up of exercises. You will learn a ton by performing them. The exercises get successively more difficult as the chapters progress, so we expect that if you already know a bit about expressions you can skip the beginning chapters and start somewhere in the middle.

Due to the raw power of expressions in NX this course is quite extensive. Most folks who use NX know at least a little about expressions but when you get into the detail you come to realize that the subject is vast. The expressions capability in NX is arguably the best, most powerful and easiest to use capability of its kind when compared to all the other major CAD programs. Most of the other CAD programs with a similar ability require you to order the expressions, “relations” just right, and you cannot make expressions on the fly. Also on other programs the available functions are limited and cumbersome. This course is an attempt to capture it all and provide real world examples from industry.

The examples in this course are done in inches. In most cases it doesn’t matter if you do them in inches or millimeters. Every exercise has been worked through and the resulting files have been organized and posted at http://designvisionaries.com/goodies/workfiles/

The techniques captured in this course reflect years of actual experience working with some of the most aggressive Fortune 500 engineering firms. It has been our privilege and pleasure to work with the engineering community for over 20 years amassing this highly interesting knowledge and sharing it with you the NX user community. Thank you so very much.

Why a separate course in NX expressions language?

The use of NX expressions language is one of the biggest advantages to choosing NX. The subject is so vast and mastering the techniques makes such a huge difference in your ability to build high quality models quickly and efficiently, that the subject warranted its own mini course. Mastering NX expressions gives you a pervasive advantage when creating almost all features in addition to synchronous modeling, surfacing, sheet metal, drafting, machining and even NX Nastran.

Who should take this course?

This course has been written for both basic and very advanced NX users who truly want to access the full power of NX. The exercises span the entire range. Advanced users will want to begin somewhere in the middle. In the end analysis almost everyone who is doing parametric modeling will benefit.
Dedication

To the men and women who commit their lives to public service. You teach us, heal us, and protect us. You are under-appreciated heroes. Thank you so very much.
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Other Learning Opportunities (a conversation with the author)

Learning how to create great models and perform real product design in NX is immensely interesting and fun for those who are creative and celebrate the ethic of the product design nerd. For me, a lot of this started when my father used to take my brother and me to the junk yard in the late 60s. In those days the US wasn’t nearly as law suit crazy as it is today. You could walk around in a junk yard and pick up all sorts of discarded stuff without anyone worrying that you would sue them if you got hurt. The three of us would delight in taking apart things and get motors, gears and every manner of mechanical component that we would use to try to create other things. Even to this day, I would highly recommend “tear downs”. I would highly recommend going to a yard sale and getting very inexpensive products and taking them apart. See how they were put together. Try to get into the head of the designers – try to learn a thing or two. Imagine how the products can be better. Apply what you know to your next project.

For CAD I would highly recommend some of the other books I’ve penned. They are available at http://designvisionaries.com/books/.

As far as I know, there is no better way to learn CAD then to have an extremely passionate and knowledgeable trainer come to visit. He will take a look at the geometry that you are responsible for and truly focus the training on the techniques that are germane to your specific tasks. He will help you innovate new ways of creating production geometry so that when he’s done you will truly be enabled by the experience. You will be extremely well served by this highly motivated guy who’s been all over the world and worked with thousands of the most creative and intelligent people. I just happen to know a guy. Give me a call any time. Of course we have a bunch of other types of training too, including on-line and distance learning to fit whatever need you may have.

Once you’ve been trained, there’s a good chance that you will begin to forget the knowledge that you have invested in learning. In order to keep that knowledge fresh we offer a product called The Sharpener. Imagine that you or your subordinates could click on a special place within your intranet and receive scores of CAD tips and techniques in video format that were specifically created for your workforce. That is the essence of the Sharpener. If interested please feel free to give me a call.

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