

Digital Photography 101

Introduction to Digital Photography



FLAAR course on digital photography at Universidad Francisco Marroquin.

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Open enrollment for Summer Course 2004



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Left: Malta studio with Zig Align technology. **Right:** Professor Dr. Nicholas Hellmuth with students at Zig align setup.

Course Description

Introduction to Digital Photography

Beginner through Intermediate into professional quality digital photography

Two versions of this course are available: mid-June into mid-July 2004 (summer), in person, in Guatemala with Professor Nicholas Hellmuth, primarily in Spanish (course material, however, available in English).

If you can't make it to Guatemala in person, you can take the course via the Internet (in English) from the comfort of your home or office anywhere in the world. We are considering Jan. 12 to March 5 / Sep. 8 to Nov. 5 2004. Sign up now, since space is limited.

Syllabus for summer '04 course in Guatemala

Includes:

- Digital photography in the studio
- Digital photography outside on location
- 35mm, medium format, and large format digital photography
- How to select the digital camera which is best for your needs
- How to avoid choosing the wrong camera, lighting, or accessories

A separate additional course (optional, not required) handles the actual printers, RIPs, and printing, but the advantage of any Digital Photography course by Nicholas is that you can be sure it's related to eventually learning how to print the results of your improved digital photos or scanned traditional photos.

Beginning through Intermediate to professional level

All course material is organized by Nicholas Hellmuth, PhD, Director, Centro de Imagenes Digitales (Digital Imaging Resource Center), Universidad Francisco Marroquin. Dr Hellmuth is also Visiting Professor, Bowling Green State University of Ohio in cooperation with FLAAR. Nicholas' photographs have been published by National Geographic as well as in coffee-table art books in Japan, the USA, and Europe.

Open enrollment, via web-based training (for the Internet version)



Left: you can look at the image shown in the monitor before printing. **Right:** view of the equipment used to produce the extraordinary result shown above, also available for you at our facilities.

You do not have to be resident in Ohio; you can take this course from anywhere in the world via the Internet.

You schedule receiving the course at the days and hours convenient for you. If you need to go away on a business trip you can skip as many days as you need to, then return and pick up precisely where you left off. In other words, you can schedule receiving the course in a personalized manner within the framework of Jan. 12 to March 5 / Sep. 8 to Nov. 5 2004.

If you want to sign up for this course write to ctpid@ufm.edu.gt



Introduction

This course is represents a program for public education of Universidad Francisco Marroquin to utilize the experiences in digital cameras recently brought to the UFM campus by the photography research institute, FLAAR. FLAAR was in the forefront of museum-quality, traditional studio and location photography before digital imaging even existed. This experience means that the new course can empathize with traditional photographers, who have a background in 35mm, medium format, and large format photography, as well as non-photographers who also need to move into the shifting sands of the digital millennium.

Course Abstract

Course discusses, compares and contrasts, and reveals pros and cons of

- Nikon, Canon, Contax, Foveon-Sigma, Fuji for 35mm SLR level.
- BetterLight, PhaseOne, Anagramm, Kigamo for wide format at the high end.
- Nikon CoolPix, Sony, Minolta, Olympus and other zoom-lens entry level.
- Imacon, Fuji Luma, Jenoptik EyeLike, MegaVision, Kodak, PhaseOne Sinar for medium format.

This course provides step-by-step instruction of how to produce digital photographs that contain optimal resolution for impressive output.

Although the emphasis is on capturing a large enough image with enough resolution for wide format printers, it is natural that if you have only a tabloid sized printer, such as Epson 1520, Epson 1270 or 1280, Epson 2000, Epson 3000, Epson 5000, Epson 5500, one of the newer Epson 2200, Hewlett-Packard 10ps, 20ps or 50ps, Canon 8500 or Canon imagePROGRAF 2200, that you will also learn how to produce better photographic and fine art giclee prints as a result of this course.



Above: HP 800ps at Francisco Marroquin University, is useful to print your digital photos at large size, we provide digital cameras so you too can do actual photography. **Below:** Picture of textiles taken with Nikon 5000.

Nicholas has about nine inkjet printers, including the fabled Iris 3047 giclee printer.

If you do not yet have any printer at all (none is required; you can take the course without owning either any camera nor any printer). We do not recommend that you buy a printer or camera until you have all the evaluations that will be available to you as a participant in this course. For example, two of those printers listed above are poorly designed with serious deficiencies; yet several of that tabloid-sized series of Epson printers is excellent and we recommend them. So surely you might like to learn which printers to avoid, and which printers are worthy of your consideration.

Target Audience

Half the people who take this course want to learn from an experienced photographer who has actually used the complete range of digital cameras

- Medium format (Hasselblad, Mamiya, Contax; for Kodak ProBack Plus, etc
- 35mm SLR (Nikon D-100 and comparable)
- entry level (Sony, Fuji, Nikon CoolPix, Minolta)
- large format (Sinar, BetterLight, etc).

Most of the people who sign up for the course primarily want tips on which camera brand and model to purchase. Then they seek help on knowing what lighting and accessories to use. Help with color management is much sought after also.

Half the people who take this course are normal individuals who simply want to experience digital photography from a really good instructor.

The other half would like to utilize digital photography in their work. To this course is appropriate for the following professions:

*Photographers, intermediate level and up

- Studio photographers
- Product photography
- Industrial photography
- Architectural photography
- Landscape and panorama photography
- Wildlife photography, plants, animals, birds

*Leisure and prosumer photographers who aspire to produce large format size



Classes of the Digital Photography course at Guatemala



Showing the different front covers of the Digital Photography units.



Live demonstration of large format Better Light Super 6000 digital camera system

*Artists (fine art giclee), art conservators

*Architects, art historians, architectural historians, architecture students

*Curators of any kind of museum, natural sciences, archaeologists

*Graphic Designers

*Realtors who need to produce excellent images

*Instructors at schools, colleges, universities, art schools, who themselves wish to use, or teach, digital photography

Students of all levels in any of the above fields who need to learn digital photography

This course is also appropriate for individuals in the following businesses:

- Advertising agencies
- All kinds of prepress or printing shops who print signs
- Government agencies
- Hotel companies
- Travel agencies

Course Objectives

Students enrolled in this course should have the following goals:

* Understand why and in what aspects an original digital photograph may produce a better result than would a scanned negative or transparency (and vice-versa in other circumstances: we explain the occasional instances when a traditional photograph is better than a digital photograph)

* Understand how the quality of a digital photograph can equal the quality of a traditional darkroom photograph, and in what circumstances this is not so

* Learn which type of digital sensor will produce the types of photographs you and/or your company need to print. Once you know the capabilities of each distinct type of digital sensor (CCD vs CMOS), then you can make an appropriate selection of a make and model of digital camera (remembering that every camera has some good features, and those same good cameras have a few weak points).

* Be able to make the best use of a camera you already have to produce at the quality that you need

* Know which aspects of Adobe Photoshop you need to concentrate on either with practice or through a subsequent course. You will also receive instruction on what after-market software is a good companion for Adobe Photoshop, and which digital asset management software can keep track of all your images.

* If you wish to be at ease with the jargon of digital photography, digital imaging, and wide format printing, then you have come to the right place. You will have enough glossaries available to you so that you will be able to read, and understand, even the most arcane report on these subjects and at least know where to go to get help with the definitions.

Research and Preparation undertaken to prepare this course for you

Three years ago we conducted a survey of roughly 90% of the photography courses available in the USA. Much to our surprise, out of several hundred universities, community colleges, institutes, museums, or photography schools, less than 3-dozen actually offered a course even labeled as digital photography.

The majority of courses that were advertised as “digital photography” turned out to be introductory courses primarily on scanning (which is not digital photography). In the few courses where a digital camera was discussed, only about 10% of the course was dedicated to the camera; 90% of the course was on Adobe Photoshop-teaching students how to repair bad scans. Again, the rubric of “digital photography” has been improperly assumed to cover scanning traditional film and then imaging the resultant scans.



Martha Martinez (FLAAR crew) teaching Malta students how to use Sony F717

Of the rare instances when a course was really on digital cameras and actual digital photography, probably seven or fewer offered a program in large format digital photography..

In distinction, UFM + FLAAR offer a unique course, not a generic course on scanning and Adobe Photoshop (which you can find almost anywhere). This course by BGSU+FLAAR is dedicated to showing how your digital photography can be (and definitely should be) good quality from the moment of image capture. Your photography should be so good out of the camera that you rarely need to use Adobe Photoshop (other than to resize the image for final printing). Obviously, in real life this goal is elusive, but nonetheless, this course seeks to prepare good quality digital photos to begin with, straight from the camera.

This goal implies learning which digital cameras are best for producing these ideal images. It turns out that the brand name is not always the relevant aspect; what you need to learn is which of the several competing technologies is best for your specific needs.

To incorporate a good mix of learning how to handle a digital camera together with specific features of Adobe Photoshop exclusively dedicated to digital photography, this course will be divided into the following 4 sections:

- The major portion of the course will be directly on digital cameras, lenses, filters, sensor technology, digital accessories, lighting, etc
- digital photography in the studio as well as out on location
- once you learn how to take good digital images the course will list which aspects of Adobe Photoshop will make them even better. But this is not itself a course on Photoshop because the best measure of a good photograph is never having to use Photoshop to repair it.

- a component of the course will introduce you to how to prepare the image for printing on a large format printer: resolution for example. How much resolution does each kind of printer technology really need: inkjet, dye sub, electrostatic, laser light, laser toner, etc. There is no book which will tell you this information (we know, we looked in over 30 books on digital photography, on scanning, and on Adobe Photoshop).

Course Content

The emphasis of this course is 35mm SLR digital cameras, medium format digital backs and large format digital scan backs.

A new generation of 5 megapixel CCD sensor made it possible to accomplish basic large format printing with a point-and-shoot digital camera costing less than \$1,000. Five years ago a camera of this nature would have cost \$28,000. This course is now adding coverage of economical point-and-shoot digital cameras, but only at prosumer level, with the newest generation of 5 megapixel cameras as a starting point. Minolta DiMage, Olympus, Nikon CoolPix 5700, equivalent Sony and Fuji 707 and 717 models would be examples.

We assume that the majority of participants will wish to learn about the Nikon D100, how it differs from the Nikon CoolPix, and how the Nikon D100 compares with the Fuji S2 Pro and Sigma SD9.

* Although there will be readings on color management, discussion of color management, glossaries of terms of color management, and lists of precisely what tools, software, and consultants can take care of your digital photography and/or your needs for color management in wide format printers, we recommend that to master color management per se you also take a separate dedicated course.



Sigma SD9 camera

Course Delivery

This course will be delivered in person by Dr Nicholas Hellmuth as well as by the several other photographers and capable staff in Adobe Photoshop and digital imaging who work for Dr Hellmuth at UFM.

Course Schedule

The summer course (in person in Guatemala at Universidad Francisco Marroquin) will run from mid-June for a month into mid-July, 2004.

This course is intended to be equivalent to a 30 hour introductory university course. However you do not have to be a professional photographer (or even an unprofessional photographer). You do NOT have to be a student at UFM to take this course. This course is intended for ages 20 through 80, for all backgrounds and interest level.

Digital Camera

The participants do not have to own a camera but ought to at least to borrow one during the course. If they do not have one yet, they should wait until the course starts since we will discuss all the pros and cons of various makes and models. We will provide information to assist the students in their eventual choice.

Pre-requisites

What background or preparation do you need to have? You do NOT need prior knowledge or experience in digital photography. About half the participants have digital cameras, the other half not yet.

You ought to already know Photoshop but we teach that as a separate course. Indeed what makes this digital photography course unique is that it's not a course on Adobe Photoshop hiding under a pseudo-title of "digital photography."

However if you are clever, you can learn Photoshop really quickly on your own. But don't try this unless you have lots and lots of spare time. If you are working two jobs plus family please don't try this.

We will, however, most definitely, describe for you the portions of Adobe Photoshop that a digital photographer needs to know. At this point again, it's your own practice, practice, until you can do it in your sleep. That's how we learned it. You, however, have an advantage. There are books available today, combined with a photographer-instructor (Hellmuth) to provide a plan and a schedule.

You need to know how to operate a computer; Mac is preferable but PC is quite good as well; we use both at FLAAR.



Professor Dr. Nicholas Hellmuth lecture of last year's Digital Photography Course

Since this course is dedicated to teaching you about digital photography, it is not required that you have background in this beforehand. It is our job to provide the reading and reference material to serve as your background.

What this course does not intend to cover

Above we listed the first thing this course does not cover, namely physics (the insides of computers and the inner secrets of voltage inside a digital camera) and chemistry (the hidden recipes inside inkjet ink and in the diverse layers of inkjet media). Yes, we cover how things work; yes we cover the different inks and media (as introduction to large format printing, remembering this is a course on digital photography for printing, not on printing technology).

Since there are over a dozen 3-to-5-pixel cameras, a dozen medium format scan backs, and four complicated tri-linear scanning backs, we are obviously unable to provide a training manual in each specific camera. We will tend to select a sample of each range (such as Sigma SD9, Nikon D100 for 35mm range; Sony F717, Nikon CoolPix 5700 for entry level 5 megapixel class; Kodak ProBack Plus on a Hasselblad and BetterLight 6000 for the tri-linear class) and feature them.

So even if you have, or wish to acquire, a Fuji or other, this course covers that same class. This is because we will discuss the cameras as a class: what performance can you expect from each. How will it affect your business, positively and negatively, if you have x, y, or z make or model of camera. So more of a business-plan kind of discussion, since we notice that so far most of the course applicants are from business. In other words, you need to understand which camera is best for your business. Plus, how much can we produce if our budget only allows x, y, or z class of digital camera.

So please do not ask us how to do macro-focusing on the Widget 4000 Digomatic camera.

You will notice that only in one course unit do we discuss scanning or scanners. That is because this is a course on cameras, lenses, and photography. Ironically Professor Hellmuth's original background in digital imaging is precisely in scanning (of 35mm, medium format, and large format on flatbed scanners and film scanners). It is precisely because of his interest in scanning that this subject has been kept separate. Scanners will be covered in subsequent courses.

Resources provided by FLAAR at BGSU: material already prepared for you.

Over the last three years of preparation for this course we have finished more than 30 reports which are now the chapters in the course textbook. This system of providing the students reports in PDF format was because no textbook has yet been written on intermediate through professional digital photography. The few available books are on entry-level point-and-shoot for family weekend photography. FLAAR + BGSU is dedicated to a more professional perspective.



Different sizes of cameras (Kodak ProBack Plus, Nikon camera, Hasselblad and BetterLight 6000), being tested on location

For the Summer '04 course the previous FLAAR textbook chapters have been updated, expanded, and enhanced with more illustrations. Considerable updating has incurred as a result of Professor Hellmuth spending so much time at Photokina tradeshow in Cologne, Germany and then at PhotoExpo in New York. Additional documentation has come from PMA 2004 during the early weeks of this spring '04. Then Nicholas had six weeks to test and evaluate digital camera systems at the University of Malta. All this additional experience has now been added to the FLAAR course on digital photography. You receive this all in PowerPoint lectures, in Spanish. If English or German is your native language, Dr Hellmuth will be glad to discuss things with you in those languages when time permits.

Class Enrollment and Credit

It is not required that students have an affiliation with a college or university to enroll in this course.

If you absolutely need course credit we can see if the paperwork can be arranged. There would be a higher price for a course with academic credit.

So far, most of the people who have shown interest in the course are people already out in the real world working. This is why we decided tentatively to offer the course as a regular training program not requiring any formal credit. This also lowers the price someone, namely a price as non-credit, where you attend the class as you would any seminar, conference, or other program of instruction.

Examples of the course units for intermediate, professional, and entry-level digital photography.

Course prepared by Dr Nicholas Hellmuth, available via the Internet in the comfort of your home or office anywhere in the world.



Cost

We checked around to see what other universities and institutes charge:

One place offered a six day course at a tuition of \$895, lab fee \$200 = \$1,095 for a week. The lowest program at this institute was \$720 total for a single week.

Another photography school charged \$1100 for a week. Their web site did not reveal what a longer course might cost.

A third institute charged \$925 plus digital lab fee of \$95 just for Photoshop for photographers, \$1,145 for how to print digital photographs and actually did not really have a real course on digital photography (only on how to use Photoshop).

Why the high price: all the above institutes are basically commercial. FLAAR is a non-profit educational institute and BGSU is a state university. Our goal is education, not a commercial business. We just need to cover the actual costs of preparing and delivering the course. Preparation has been intensive and several staff members are part of the team assisting Dr Hellmuth.

During the months of preparation of this course, Professor Hellmuth's staff searched every other university and photo school they could find. Virtually no course was actually fully on digital photography with a digital camera. Instead courses were on scanning and imaging, but merely labeled as "digital photography."

Actually a hobby photographer from San Francisco came all the way to Guatemala to take the summer version of this course (in person; the spring version is via the Internet). He said he could not find any other digital photography course in America which offered as thorough a program.

The course fees in Guatemala will be:

- Q.1,800.00 for students (Guatemalan nationals)
- Q.2,100.00 for general public (Guatemalan nationals)
- Fee for residents in Guatemala is US \$ 400;
- Non-resident full time university students under age of 28 is US \$ 500.
- Non-resident non-student US \$800.



Left: Betterlight digital panoramic equipment on location in Antigua. Right: a section of the resulting panorama from using the large format digital panoramic system.

BGSU+FLAAR program is pure digital photography along with tips on Adobe Photoshop.

The university here takes credit cards. You do not pay FLAAR anything; the income goes to the university to cover the joint costs of UFM + FLAAR preparing all of this

Course Grading

So far, everyone who has asked to sign up is already out in the real world working at a job in industry: repro shops, educational institutions, photo studios, fine art gleece, and a wide range of other professions.

In other words, there are no “students” who need course credit. Hence we can avoid “grading.”

People who are working photographers usually already have enough projects of their own, so the above list is primarily if you are enrolled as a student, need a grade, and hence need assignments to be graded.

Signing Up

There is no requirement that you be a student in the traditional sense, the course description is more important than the course number. Actually we don't usually assign a course number.

To sign up contact ctpid@ufm.edu.gt.

Difference between the BGSU version and the UFM version

The difference is that the BGSU course is intermediate to advanced, whereas the UFM course is introductory level to intermediate. The UFM course is in-person in Guatemala in the summer; the BGSU course is world-wide via the Internet.

Unique aspects of this course

This is the only course on digital photography that includes documentation from Photokina photography tradeshow and then follow-up with direct broadcast from PMA and PhotoExpo East.



Digital camera setup of FLAAR-Malta students at Malta's Royal Palace

This course offers an instructor who has published in National Geographic, in coffee table books in Japan and Austria. He knows 35mm, medium format, and has used 4x5 and 8x10 large format cameras for years.

FLAAR is probably the best equipped independent university-based photography institute in the country. It is rare for a professor to have access to every level of digital technology from \$500 Nikon CoolPix up to \$97,000 Cruse digital camera system from Germany. Indeed FLAAR is the only university in the North American continent to have this camera (others are in universities, museums in Germany, the Vatican, the Czech Republic, etc). Yet the camera is as easy to use as point-and-shoot models. Nicholas is one of only three people in the USA to have both a Dicomed digital pano system and also a large format BetterLight Pano/WideView turntable system.

But don't worry, the focus of this course is on Nikon, Canon, Fuji, Minolta, Olympus, and normal digital cameras that you can easily afford. Indeed that's why most people take this course, to learn what is the best digital camera for the least amount of money. Do you realize that you can pay \$2,000 or \$18,000, and essentially get the same level of digital camera? Actually you can get the identical CCD sensor in cameras costing \$11,000 to \$24,000. Frankly we have the \$11,000 model because why pay double for the identical technology. But what if you can get close to that quality for only \$2,000!

This course is an unprecedented opportunity to learn about state of the art digital cameras, lenses, digital imaging software, digital lighting, and all in the convenience of your office or home.

Summary

Is now a good time to switch from film-based traditional photography to digital photography?

What does it really cost to switch to digital photography?

Why should you continue with film cameras and NOT switch to digital photography?

What are the limitations of current-generation digital camera systems?

What are the things you can do with film which you cannot do with digital cameras?

Should portrait photographs stay with film or switch to digital?

Should product and traditional studio photographers stick with film or move to digital?

What about landscape or architectural photographers?

And nature photography? Is it better to stick with traditional film? If I should go digital, what camera should I be looking at?

If these are the questions you seek answers for, come to this course.

Downloads

The abstracts of all thirty of the learning units, illustrated, is available as an automatic download at no cost. These abstracts are in full color in Adobe Acrobat PDF format.

To Sign Up

To sign up for the course in person in Guatemala, do that via ctpid@ufm.edu.gt

Course material will all be in English via the Internet version, or in Spanish in Guatemala. However we can arrange to provide you the textbook in English if you take the Guatemala course if English is your native language or otherwise easier for you to understand. You can correspond en español oder auf Deutsch

If you want to sign up for this course via the Internet from anywhere in the world, via Continuing Education 2004, fill out the [sign up](#) form.

If you need the course immediately, and can't wait for a regularly scheduled time, you can sign up directly with Dr Hellmuth on a consultancy basis. You get all course material and three 30-minute phone calls to him so you can ask questions. Cost is \$1200. Contact FLAARtest@aol.com to indicate your interest and state when you need the material. Payment is by check to FLAAR; no credit card payments for the consulting option.



Malta student learning how to use BetterLight camera, with professor Dr. Nicholas Hellmuth

www.wide-format-printers.org	www.fineartgicleeprinters.org	CLICK HERE TO VIEW EACH FLAAR NETWORK SITE
www.digital-photography.org	www.flatbed-scanner-review.org	
www.laser-printer-reviews.org	www.cameras-scanners-flaar.org	www.large-format-printers.org
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