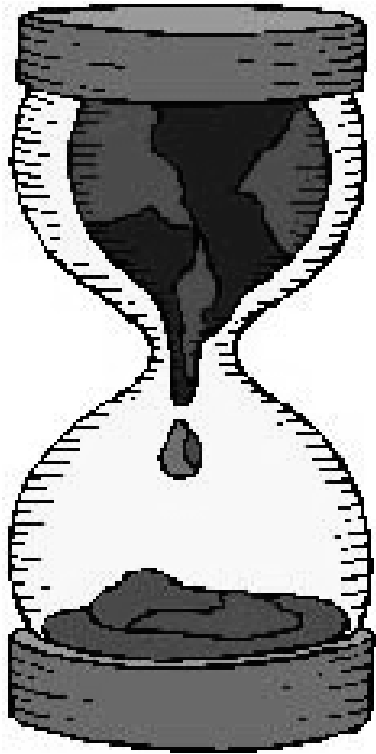


# ***WELCOME TO NATS 101***

## **INTRODUCTION TO GLOBAL CHANGE**



*Your Professor:*

**Dr. Katie Hirschboeck \***  
**Associate Professor of Climatology**  
**Laboratory of Tree-Ring Research**

*\* (pronounced: "hersh-beck")*

Your should have obtained two (2) handouts  
when you came in today.

Please fill out the short one and turn it in at  
to the TA before you leave today.

# This is a General Education / Teaching Team Course



# ***Your Teaching Team:***

**Professor: Dr. Katie Hirschboeck**

(Laboratory of Tree-Ring Research, LTRR)

**Office:** 208 West Stadium (yes, the football stadium!)

**Graduate Teaching Assistants (GTA's)**





**Rebecca Franklin**  
LINAH



**Jacquie  
Dewar**



**Kanin  
Routson**  
KELLY

**Your  
Graduate  
Teaching  
Assistants  
(GTA's)**



**Elizabeth May**

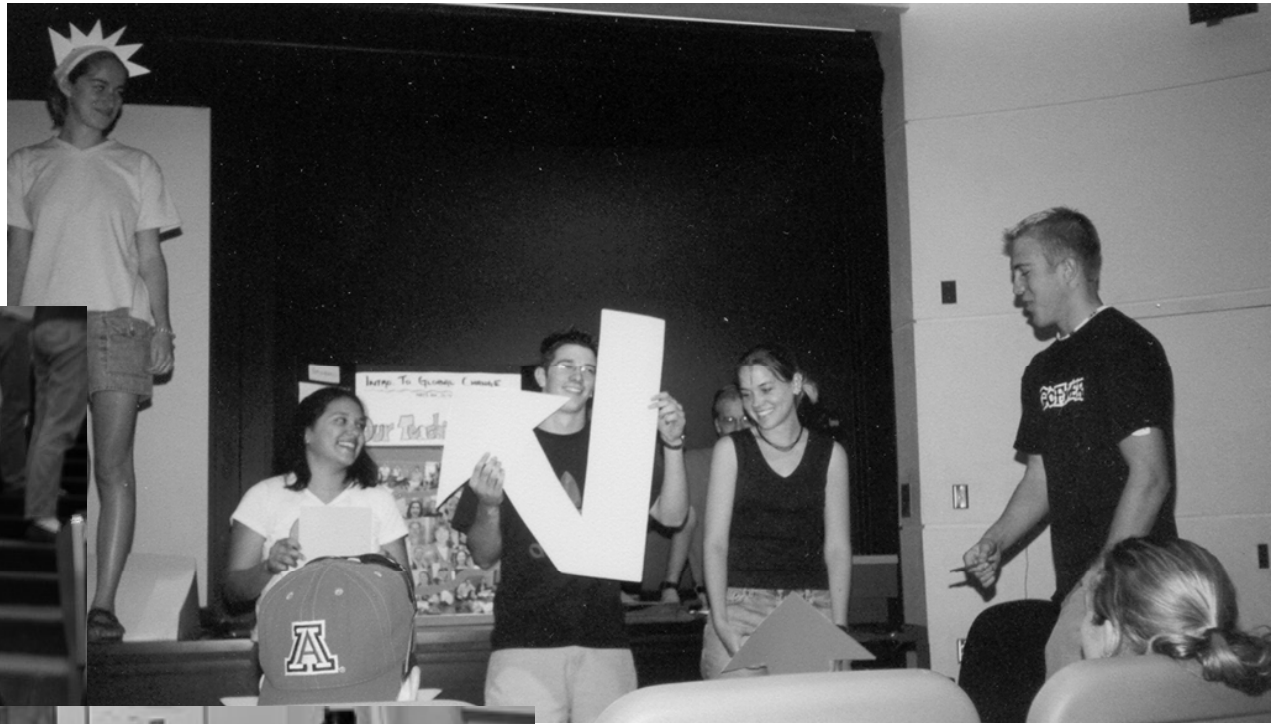


# *and* Undergraduate Preceptors

## THIS COULD BE YOU!!



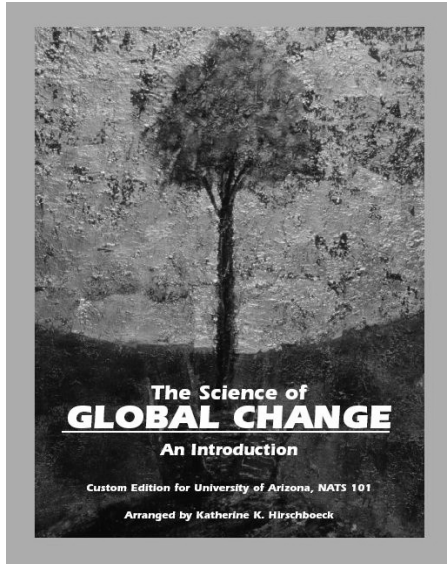
*Come in for an  
interview and  
learn more!*



THE UNIVERSITY OF ARIZONA

# **COURSE LOGISTICS**

# “SGC” COURSE LOGISTICS



*Required: 2 TEXTBOOKS*

Begin reading Chapter 1  
now in “SGC” . . .

NOTE: assigned readings are  
listed on the Reading  
Assignments Schedule.

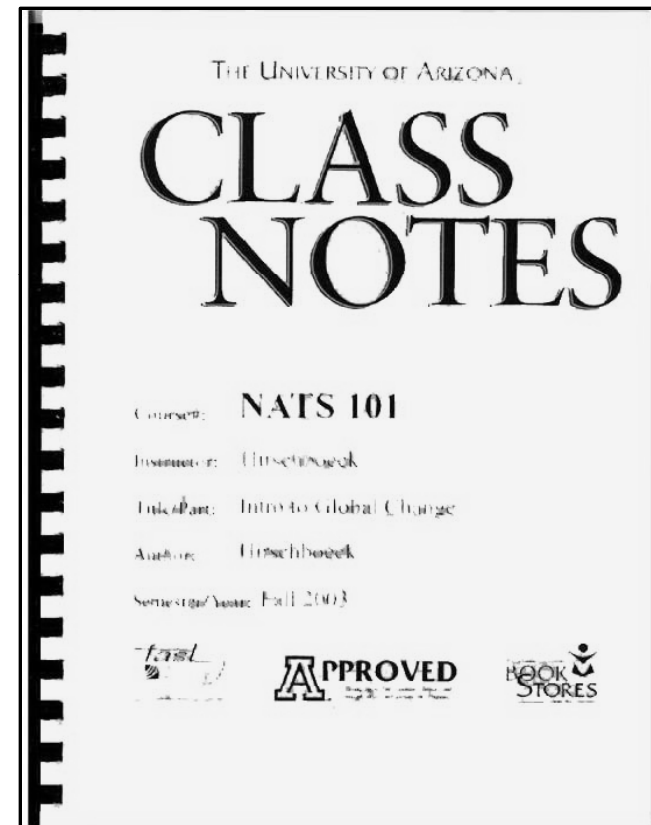
Find it in the online Syllabus & on  
the course webpage under Quick  
Links.

Also see the weekly D2L  
Checklist.

# COURSE LOGISTICS

. . . Plus a **CLASS NOTES PACKET** which will be available **NEXT WEEK** in the ASUA Bookstore (go to the *Books Customer Service Kiosk* downstairs)

You'll need it **NEXT WEEK!** I'll post an announcement in D2L when it is ready for purchase.



# COURSE LOGISTICS

. . . Plus a  
**Turning Tech “CLICKER”**

Also available in the ASUA  
Bookstore.

You'll need it starting NEXT WEEK!

NOTE: You cannot return these if opened, but you will be able to sell it back at end of semester . . . it's becoming the new “standard” clicker on campus & you should be able to use it in other classes.



*Turning Technologies  
Response Card XR*

*How this class will operate:*

**Class is divided  
into ~ 20  
collaborative  
learning groups**



**Most of you are  
first-year  
students & non-  
science majors**



# **COURSE LOGISTICS**

## **DURING CLASS TIME:**

- **Lectures**
- **Learning Aids (videos, clicker Q's demonstrations, etc.)**
- **In-Class Individual or Group Learning Activities & Assignments**
- **Tests**
- **Discussions**



# **COURSE LOGISTICS**

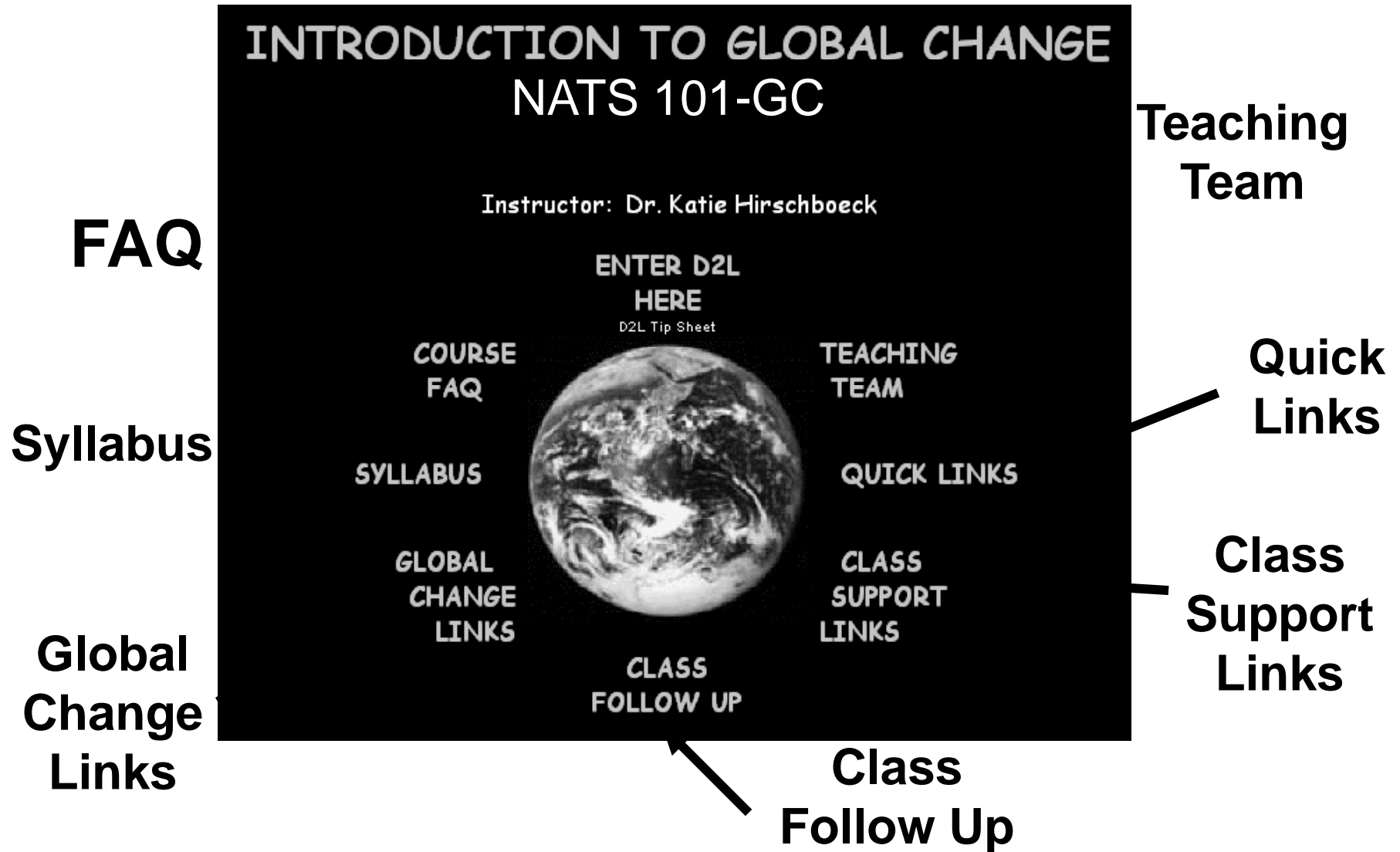
## **Homework / On Your Own:**

- **Textbook reading & studying**
- **D2L Online Activities (Self-checks, online Quizzes, Discussion posts, Mail, Chat room, etc.)**
- **Individual Assignments  
(some web-based)**

# COURSE LOGISTICS

NATS 101-GC Website:

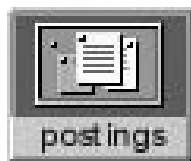
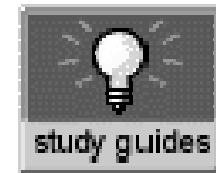
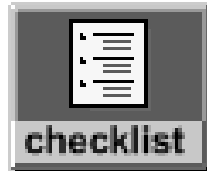
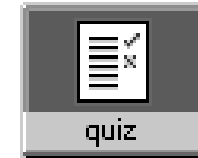
<http://fp.arizona.edu/kkh/nats101gc/>



# COURSE LOGISTICS: D2L

“Desire To Learn”

D2L is a web-based online learning environment equipped with many learning tools & links.



You can get to D2L via our NATS 101-GC WebPage  
or directly at: <http://d2l.arizona.edu/>  
Then you LOGIN using your UA NetID:

**INTRODUCTION TO GLOBAL CHANGE**  
FALL 2006 NATS 101, LEC 40  
T & Th 12:30 - 1:45 pm - Integrated Learning Center 140  
Instructor: Dr. Katie Hirschboeck

ENTER D2L  
HERE  
D2L Tip Sheet

COURSE  
FAQ

TEACHING  
TEAM

SYLLABUS

QUICK LINKS

GLOBAL  
CHANGE  
LINKS

CLASS  
SUPPORT  
LINKS

CLASS  
FOLLOW UP



**(NOTE: To LOGIN  
you MUST be  
registered in the  
course first!)**

University of Arizona - D2L(Desire2Learn) - Microsoft Internet Explorer

File Edit View Favorites Tools Help Back Forward Stop Home Search

Address <http://d2l.arizona.edu/>

Links Search IMPs Katie kt NATS Syn ARL595a Courses Library UA U of A UA Dept

**THE UNIVERSITY OF ARIZONA**  
TUCSON ARIZONA

Home

**NetID Login**

UA NetID Login

1. Check that your browser is compatible.

2. Click on the UA NetID Login button.

If you do not have or have forgotten your NetID, visit the [UA NetID site](#).

**HELP**

**ANNOUNCEMENTS:**

**Pre and Summer Sessions** - Pre Session students have access to D2L courses now. Summer Session students will receive access before the first day of class for that session.


**HOW TO ACCESS A D2L COURSE:**


**Students:**

1. You need to be registered for the course you are trying to access AND have had a valid UA NetID for at least 24 hours---that's the same ID and password that you use for UA WebMail. If you do not have or have forgotten your UA NetID and/or Password then visit the [UA NetID site](#).
2. [Check that your browser is compatible.](#)
3. Click on "UA NetID Login" button in the upper left corner of this page. Enter your UA NetID and Password. You will be passed to your MyHome page in D2L.
4. In the center of the page that appears, find the blue box labeled "Academic Courses." Click on the (+) symbol to the left of the appropriate term. A list of departments will appear.
5. Click on the (+) symbol to the left of the department in which a course is offered.
6. Click on the name of the course. This will take you to the course home page.

Then click on the course title . . .

My Home D2L Email Locker D2L Help


 THE UNIVERSITY OF ARIZONA  
TUCSON ARIZONA

**My Settings** 

Welcome, stella!


My Settings:

- [My Preferences](#)
- [My Personal Homepage](#)
- [My Profile](#)

**Events** 


No Events

**Open my**

**Bookmark** 

No bookmark added.

**Search**

**News** 


► **Classlist Rostering Tool Operational** - Aug 18, 2005  
*Instructors:* the classlist rostering tool is now operational. Thank you for your patience.

► **Fall 2005 Courses Now Active** - Aug 15, 2005  
*Instructors:* All Fall 2005 courses have been set as **active** as of August 15th. If you would like to override our release of your course then you will need to do the following: Login to your course and click on "Edit Course" in the navbar. A new page will appear, with a check box labeled "Active?" Uncheck the box and save your change to make the course inactive. *It is important to remember to activate a course, otherwise students will never be able to see it.*

► **D2L Issues**  
**If you encounter any error messages, unexpected behaviors or frustrations please fill out a [Problem Report Form](#) so that we can investigate the issue and improve your online learning experience.**

**2005 Fall**

- NATS - NATURAL SCIENCES**
  - [NATS101 F05 034 Intro to Global Change Hirschboeck](#)

Powered by  Desire2Learn

.. and you'll arrive at our D2L Homepage!

My Home | D2L Email | D2L Help | Locker | Logout

Change-Hirschboeck | Logo

THE UNIVERSITY OF ARIZONA  
TUCSON ARIZONA

Course Home | Classlist | Chat | Discussions | GRADES

Page | Reading & RQ Schedu

Welcome

Welcome, Katie!

My Settings:

- My Preferences
- My Personal Homepage
- My Profile

Events

**NATS 101-040 F'06 Global Change-Hirschboeck**

Aug 24, 2006

Read Essay "On Scientific Method" by Robert Pirsig

Open my Events

Updates

- 0 New D2L Email Messages
- 0 New Dropbox Submissions
- 0 Unread Discussion Messages
- 0 Ungraded Quiz Attempts
- 0 Broken Links


Role Switch





To simulate the view of another Role, select a Role from the "My Current Role" drop-down list.

My Current Role:





Search News Change Order Add

test Edit

 **NATS 101 INTRODUCTION TO GLOBAL CHANGE**

 [class website](#)  [FAQ](#)  [checklist](#)  [Follow Up](#)

[NATS 101 GC Webpage](#) [Course FAQ](#) [Checklist Tool](#) [Class Follow Up](#)

 [assignments](#)  [self-test](#)  [quiz](#)  [study guides](#)

[Assignments](#) [Self Test](#) [RQ's](#) [Study Guides](#)

[CLICK HERE](#) for a [GUIDE TO OUR D2L SITE LAYOUT](#) (opens in a new window)

LATEST NEWS: Edit

**WELCOME TO NATS 101-GC INTRODUCTION TO GLOBAL CHANGE!!**

I look forward to seeing you on the first day of class  
TUESDAY Aug 22 at 12:30 pm in [ILC room 140](#)

Please review the layout for our NATS 101 D2L site above,  
then visit the **CHECKLIST TOOL** above to find out  
what you need to do for the first week of classes.

*Your professor,*  
[Dr. Katie Hirschboeck](#)

General D2L links (will work in all your D2L courses)



Chat & Discussion tools

YOUR GRADEBOOK

PAGER

LOGOUT



NATS 101-GC Course schedules

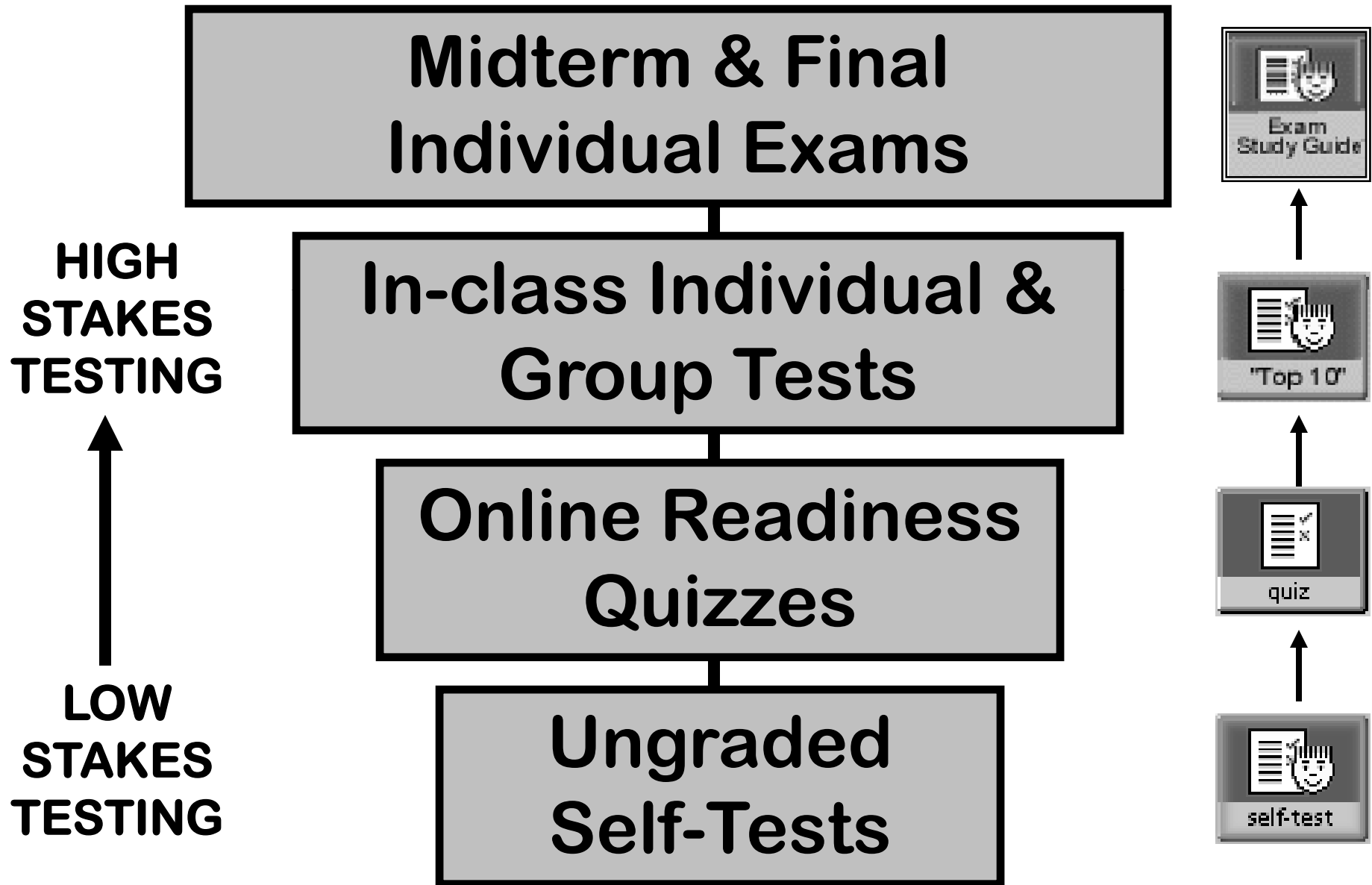
NATS 101-GC COURSE HOME  
*(Best way to get back to the NATS D2L homepage is to click here – your browser's BACK button may not always work)*



Main NATS 101-GC Course Tools here

News & Announcements here  
*Check this daily for the latest news about the class*

# Multi-Tiered Testing Approach:

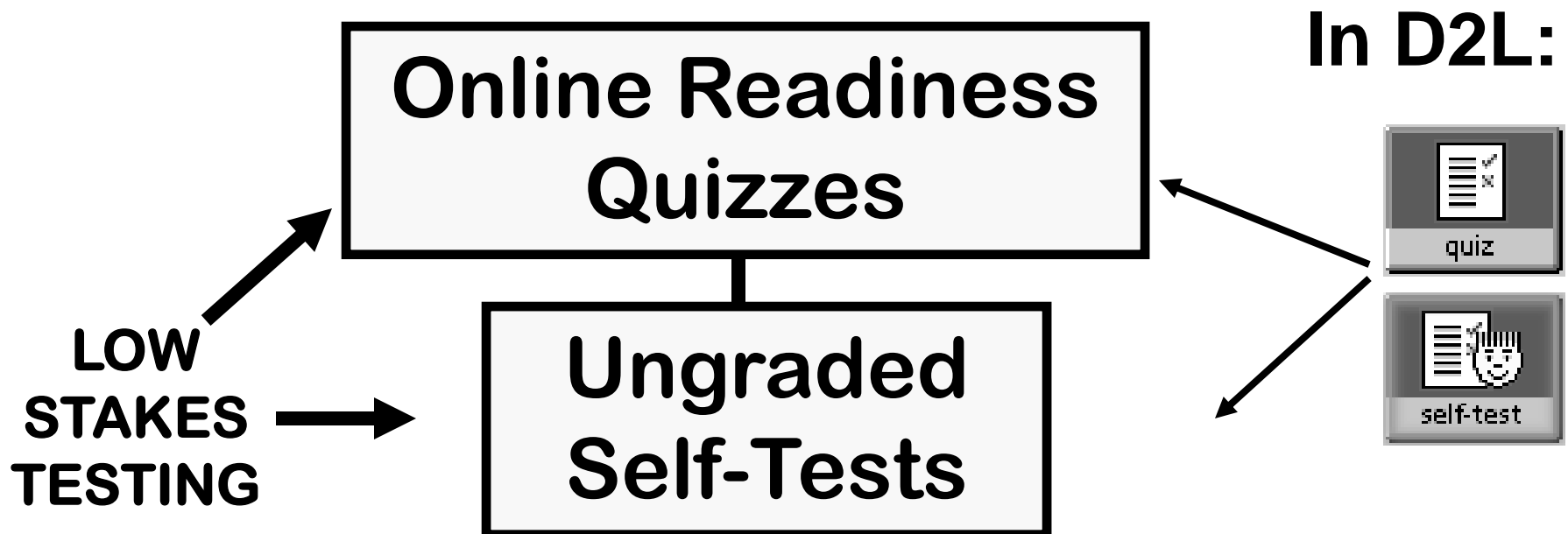




# Multi-Tiered Testing Approach:

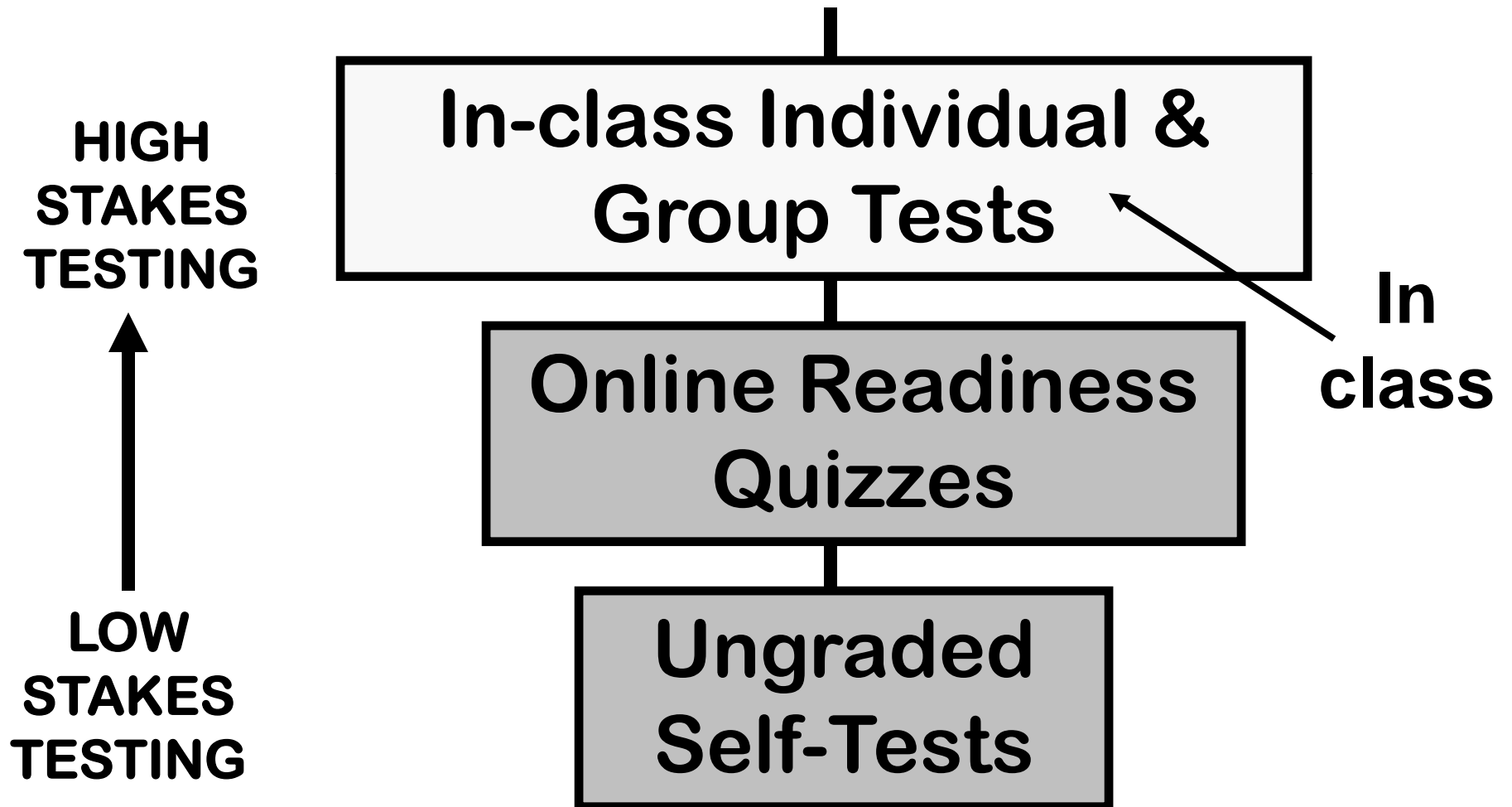
**START OUT WITH UNGRADED  
SELF-TEST & SHORT ONLINE QUIZ**

*To give you feedback in your reading comprehension, you'll start with "low stakes" online quizzes (0 - 5pts each)*



# Multi-Tiered Testing Approach:

*... and then move on to “higher stakes” 25 pt tests on the course material, taken in class:*



# **Individual in-class testing procedure:**

**These are short, 10-question quizzes that you'll take after we cover a set of topics in class.**

**Each question is worth 2 pts = 20 pts for the entire Individual Test.**

**You'll take it as an individual first . . .**

After individual test forms are completed and collected, you'll get into your learning group and take the same test as a group!



**You'll find out  
your Group Test  
score  
IMMEDIATELY  
after you take it!**

**How??**



With special “IF-AT” forms for “immediate feedback” on your Group Tests & compute your group score yourselves.

**IMMEDIATE FEEDBACK ASSESSMENT TECHNIQUE (IF AT)**

Name \_\_\_\_\_ Test # \_\_\_\_\_

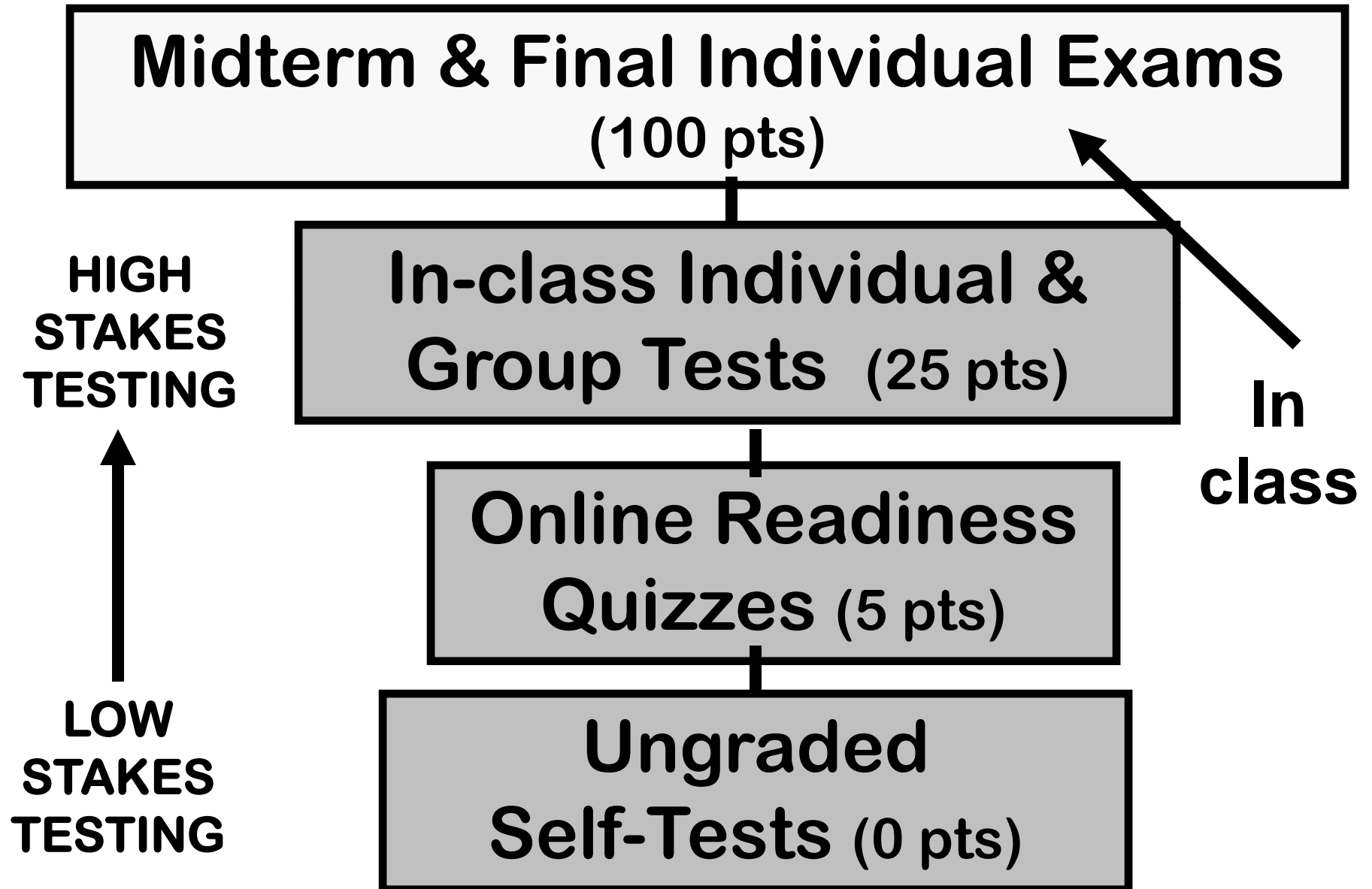
Subject \_\_\_\_\_ Total \_\_\_\_\_

**SCRATCH OFF COVERING TO EXPOSE ANSWER**

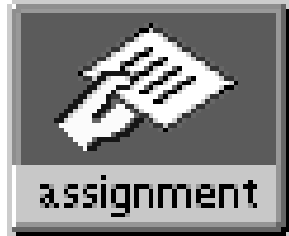
	A	B	C	D	Score
1.					_____
2.					_____
3.					_____
4.					_____
5.					_____
6.					_____
7.					_____
8.					_____
9.					_____
10.					_____

The Group Test is worth a total of 5 pts

# Multi-Tiered Testing Approach:



# ABOUT ASSIGNMENTS:

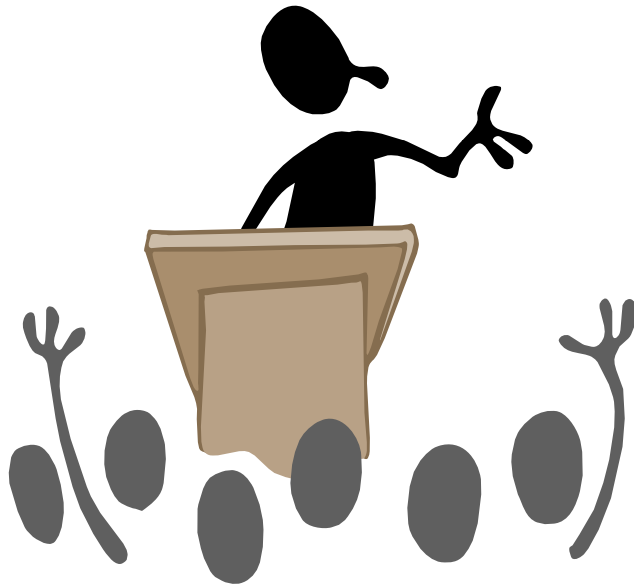


**Group**  
in class  
assignments  
(5 pts each)



**Individual**  
homework  
assignments  
(20 pts each + a 30 pt  
“Personal Project”)

# QUESTION BREAK!





**WHAT IS THIS COURSE  
ALL ABOUT?**

**SCIENCE  
& PHYSICAL SCIENCE CONCEPTS**

**THE EARTH**

**HOW & WHY  
GLOBAL CHANGES OCCUR**

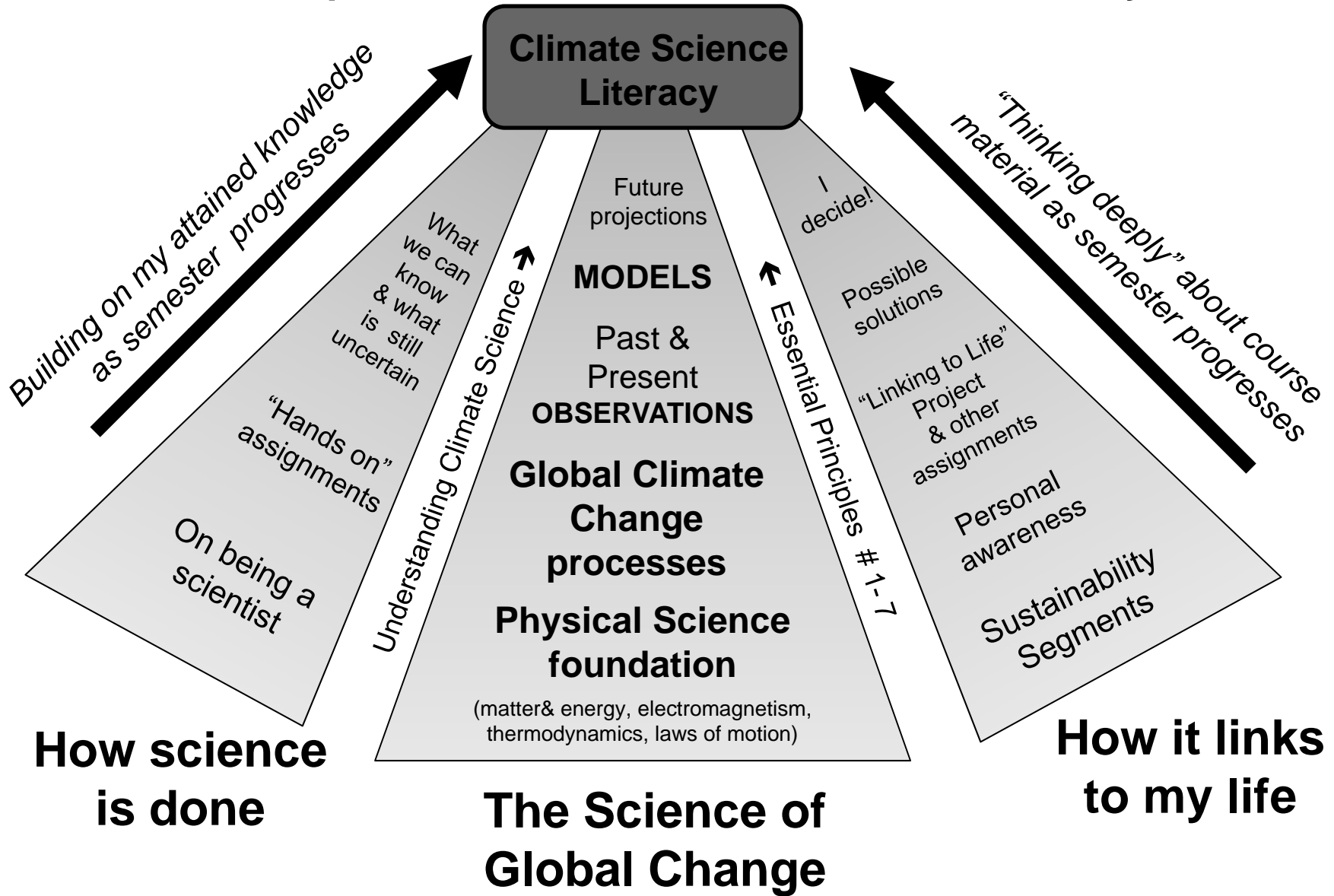
**YOUR ROLE AS  
A CITIZEN OF OUR PLANET**

# The goal: “**Climate Science Literacy**”

*A climate-literate person:*

- understands the essential principles of Earth’s climate system,
- knows how to assess scientifically credible information about climate,
- communicates about climate and climate change in a meaningful way, and
- is able to make informed and responsible decisions with regard to actions that may affect climate.

# GOAL: Enhanced Understanding Of Global Change Science, How It Operates, & What It Means To Me Personally



# Why study the Earth System & Global Change?



<http://www.earthweek.com/>

## Gulf Oil Disaster Creating Huge Marine Dead Zones

July 2, 2010



Research vessels surveying the area around the ruptured BP well in the Gulf of Mexico say they have found evidence that methane bubbling from the well is creating oxygen-depleted "dead zones" where fish and other sea creatures can't survive.

Duke University marine biologist Larry Crowder says he found that fish are already being driven from their habitat by "astonishingly high" levels of natural gas escaping from the well.

"Basically, the fish are moving closer to shore to try to get to better water," said Crowder.

In a conference call with reporters, Samantha Joye of the University of Georgia said the high volume of methane from the leak could upset the ocean food chain.

Joye added that the methane was parking in a 650-foot layer between depths of 3,300 and 4,300 feet in concentrations high enough to deplete oxygen levels.

"We haven't seen zero-oxygen water but there is certainly enough gas in the water to draw oxygen down to zero," she said.

Methane levels in parts of the Gulf near the BP oil leak have been measured at 100,000 times their normal concentrations by two independent research teams.



Some areas of the Gulf of Mexico are becoming so devoid of oxygen due to the spill that fish can no longer live there.

## Massive Chunk of Greenland Glacier Breaks Off

July 16, 2010



A massive chunk of Greenland's Jakobshavn Isbrae glacier broke off into the sea earlier this month, startling scientists who detected the event within hours thanks to satellite images.

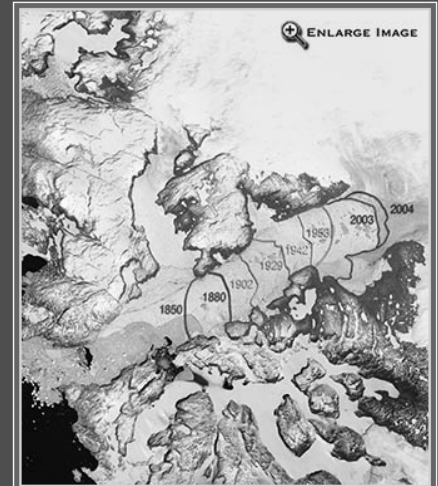
The breakup of nearly 3 square miles of ice caused the glacier to retreat inland nearly 1 mile between July 6 and 7, to a point farther from the sea than ever before observed.

Jakobshavn Isbrae is responsible for as much as 10 percent of all ice lost from Greenland, and is believed to be the single largest contributor to sea level rise in the Northern Hemisphere, according to NASA.

The sudden breakup "lends credence to the theory that warming of the oceans is responsible for the ice loss observed throughout Greenland and Antarctica," said Thomas Wagner, a NASA cryospheric scientist.

Wagner said the event is unusual "because it occurs on the heels of a warm winter that saw no sea ice form in the surrounding bay."

The glacier is located on Greenland's west coast and has moved more than 27 miles since 1850. It's moved almost six miles over the past decade.



The steady retreat of Greenland's Jakobshavn Isbrae glacier can be seen in this NASA image.

Photo: NASA

## Even More Hot Times Are Coming ... Soon

July 16, 2010



The sweltering heat waves that have baked several parts of the Northern Hemisphere over the past two weeks will become commonplace within the lifetimes of most of the world's current inhabitants, according to a new report.

Researchers from Stanford University confirm earlier studies that point to the average temperature reaching 3.6 degrees Fahrenheit higher within 30 years than it was in the mid-1800s.

Noah Diffenbaugh says he and his team also found that the longest heat waves on record that occurred between 1951 and 1999 will likely become five times as frequent between 2020 and 2029.

Writing in the journal *Geophysical Research Letters*, the researchers caution that the 2030s are likely to become even hotter.

"By the decade of the 2030s, we see persistent, drier conditions over most of the U.S.," writes Diffenbaugh.

"Not only will the atmosphere heat up from more greenhouse gases, but we also expect changes in the precipitation and soil moisture that are very similar to what we see in hot, dry periods historically," Diffenbaugh added.



Photo: KTS Design - Fotolia

"In the next 30 years, we could see an increase in heat waves like the one now occurring in the eastern United States or the kind that swept across Europe in 2003 that caused tens of thousands of fatalities." — Noah Diffenbaugh

## Pakistan Flood Disaster Gets Slow Relief Response

August 20, 2010



The unprecedented flooding submerging almost a third of Pakistan has become one of the worst natural disasters of our time.

The U.N. estimates that as many as 20 million people have lost their homes due to the inundation.

A large number of those victims still have not received any relief assistance from their government or international aid agencies.

The U.N. warns that the Pakistan floods have affected far more people than the 2004 Indian Ocean earthquake and tsunami, the 2005 Kashmir earthquake and this year's devastating quake in Haiti.

U.N. Secretary-General Ban Ki-moon has described Pakistan's unimaginable flooding as the worst disaster he has ever seen.

Emerging waterborne disease across the flood zone could result in more fatalities than from all those other disasters combined.

"I just don't think the world has realized the magnitude of this now, because ... it doesn't have the drama of an earthquake that impacts a huge number of people all at once," said USAID's regional adviser for South Asia Bill

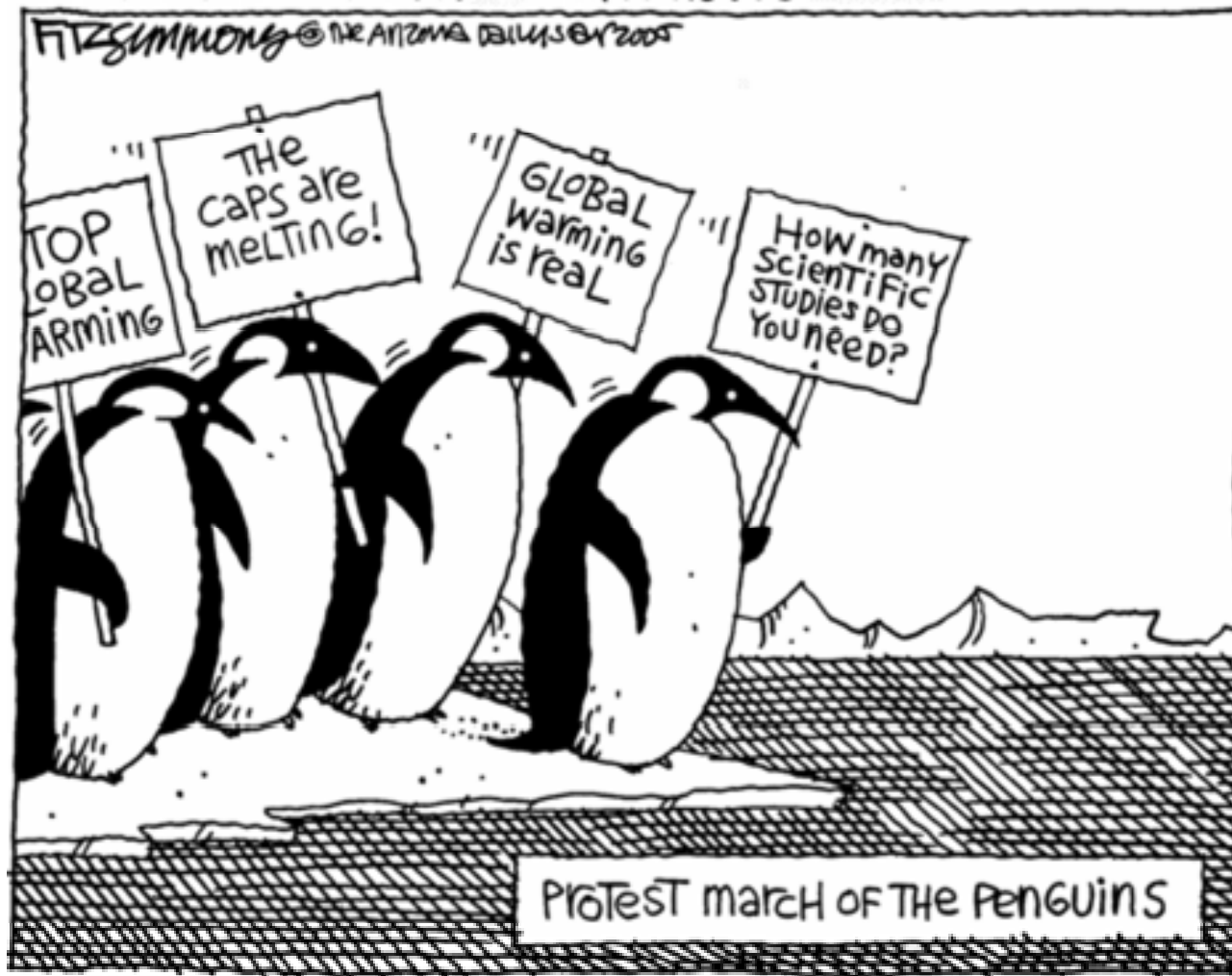


The threat of waterborne disease is mounting daily across the Pakistan flood zone.

## Questions **GLOBAL CHANGE SCIENTISTS** are asking and studying:

- How and why are these changes occurring?
- What are the impacts? Who will be most vulnerable? Where will impacts be greatest?
- Can human beings do anything to stop or mitigate these changes?
- . . . or are they part of “natural variability” that will happen no matter what we do?
- How can humanity adapt to global changes?

**THESE ISSUES ARE NOT WITHOUT  
CONTROVERSY!! We'll address this too!**



# **DOING SCIENCE & BEING A SCIENTIST**

## **BASIC PHYSICAL SCIENCE BACKGROUND:**

- **The Nature of Matter**
- **Thermodynamics & Energy**
- **Electromagnetic Radiation**
- **Mechanics & Energy**



Physics Fundamentals for  
Understanding Global Change



Tools of the  
Global Change Scientist



Tying It All Together:  
Key Global Change Issues

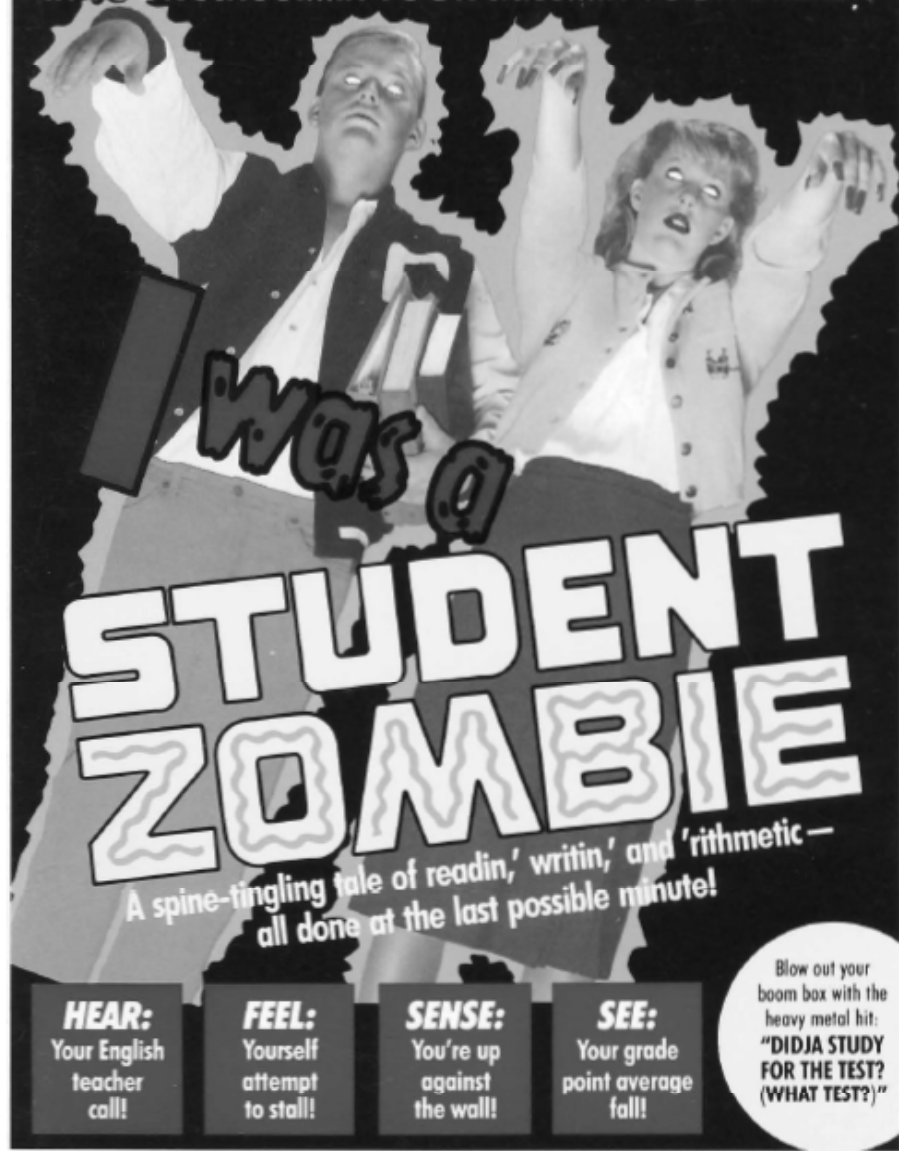
# WHAT KIND OF BACKGROUND DO I HAVE TO HAVE?

- **CRITICAL READING SKILLS**
- **WRITING SKILLS**
- **BASIC MATH & QUANTITATIVE  
REASONING SKILLS**
- **HIGH SCHOOL SCIENCE**
- **TEAM WORK SKILLS**

**Important: regular computer access is  
REQUIRED for this class!**

*(Please fill out the background form turn it in  
before you leave today)*

It's happening right now...in YOUR town...  
in YOUR school...in YOUR class...in YOUR BRAIN!



**HEAR:**  
Your English  
teacher  
call!

**FEEL:**  
Yourself  
attempt  
to stall!

**SENSE:**  
You're up  
against  
the wall!

**SEE:**  
Your grade  
point average  
fall!

Blow out your  
boom box with the  
heavy metal hit:  
"DIDJA STUDY  
FOR THE TEST?  
(WHAT TEST?)"

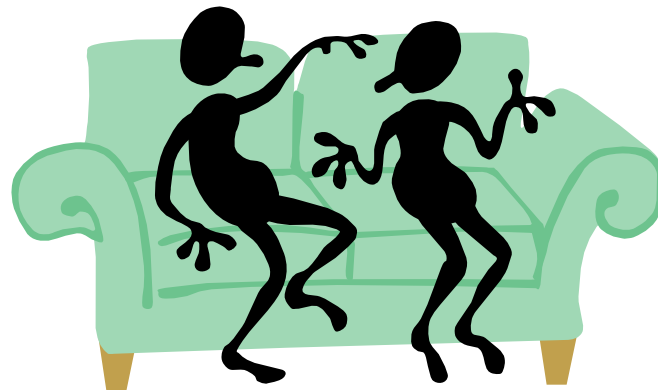
Starring THE TEACHER'S PET · THE PUZZLED ATHLETE · THE CRAFTY CHEATER  
and A CAST OF DOZENS OF DAZED, DEMORALIZED DUNCES JUST LIKE YOU

**R** REMEDIAL READING  
REQUIRED

**ZOMBIE  
BREAK !**

*Get to know someone in class:*

1. Name?
2. Where from?
3. What year & major?
4. Most interesting place on Earth visited?
5. Ever experienced an unusual environmental phenomenon? (flood, landslide, earthquake, tornado, wildfire, etc. . . . .)



# **“Dr. H” CLASSROOM POLICIES**

(more at online FAQ “Frequently Asked Questions”):

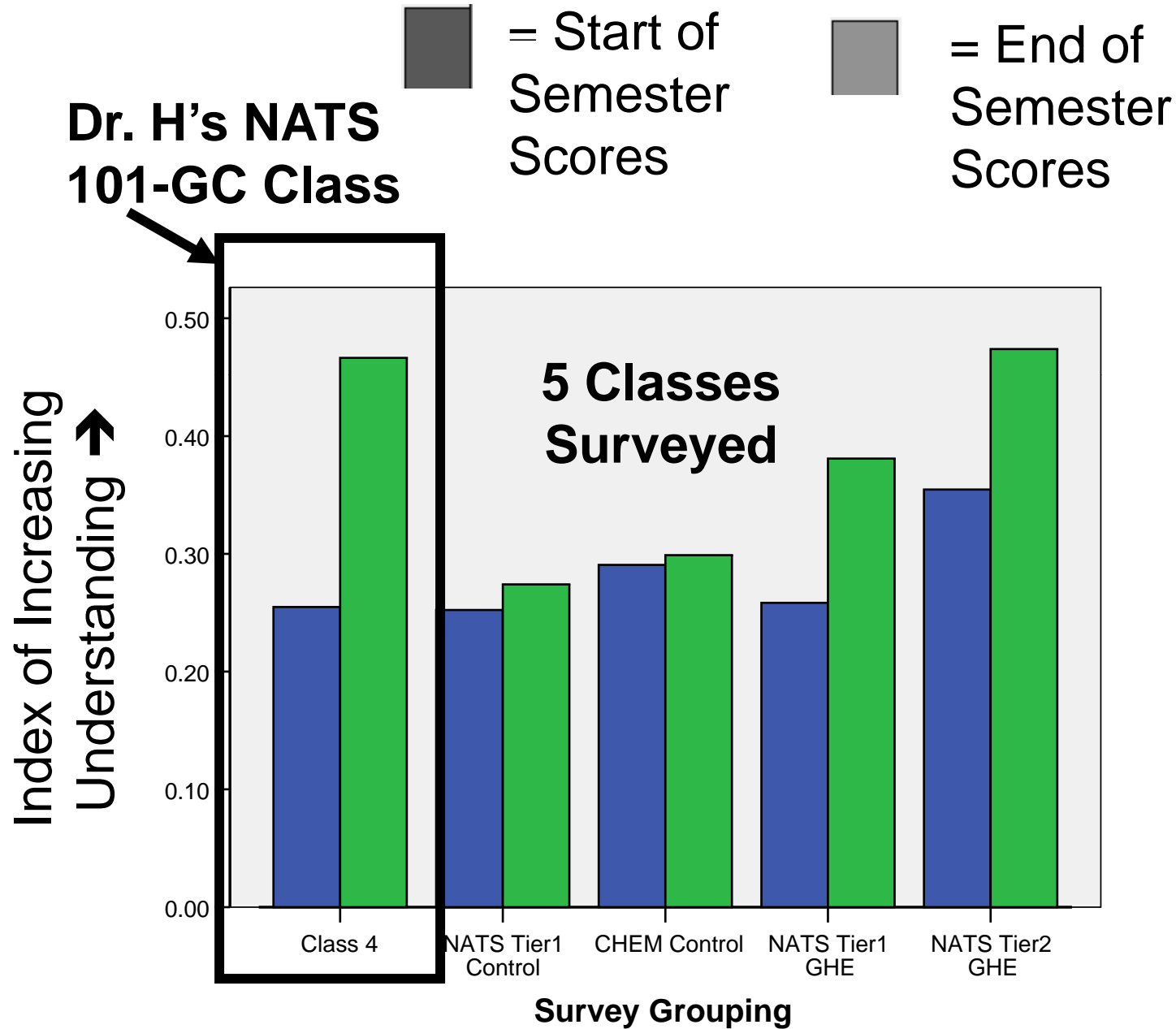
- 1. Sorry, but no questions can be answered *before* class until teaching equipment is set up & ready to go.**
- 2. Questions *after* class will be answered after the equipment has been shut down (best to do this away from the front desk or outside the classroom).**
- 3. All electronic devices (esp. cell phones) must be shut off throughout the class period – including LAPTOPS!  
... except your CLICKERS of course! See FAQ #36  
**Absolutely NO TEXTING!****
- 4. Respect your professor and each other. Refrain from conversations with your classmates during lectures, presentations, videos, etc. – except when INVITED to!**
- 5. No food or drink (except in closed containers) in ILC.**

# WHAT KIND OF STUDENT SHOULD I BE IN ORDER TO GET MY MONEY'S WORTH OUT OF THIS COURSE?

*Students who mesh well with Dr. H's teaching style and the format of this NATS 101 lecture section:*

- ***Like a class that is structured with lots of online support***
- ***Enjoy working with fellow students in groups during part of the class period (not a loner)***
- ***Have convenient access to a computer and the internet and check it frequently***
- ***Are "visual" learners who like lots of graphics in lectures***
- ***Attend class regularly and like to keep up with the material as it is taught (tiered testing helps! )***
- ***Enjoy being in a class geared toward first- and second-year students***
- ***Have a sense of humor!***

# GREENHOUSE EFFECT (GHE) UNDERSTANDING



# **And speaking of ASSIGNMENTS . . .**

Here is your first Assignment:

- 1. Read & study the Syllabus and the online FAQ (Frequently Asked Questions) Then take the first Practice SELF TEST and Practice Readiness Quiz to test your understanding of the course logistics & policies.**
- 2. Go to QUICK LINKS & read the short essay “On Science” by Robert Pirsig before class this Thursday 8/26**

**PASSWORD = nats101gc**



**NEXT:**

## **About the Teaching Team Program & becoming a Preceptor**

(see Syllabus & Nats 101-GC website for additional details on being a Preceptor in this class)



## **Teaching Teams Program**

*Putting People Back Into Education*

# What Does a Teaching Team do for class?



- Hands-on projects and activities



- Various Learning Opportunities  
*(which cater to most learning styles!)*
- Helpful Resources and extra support



# Who is on a Teaching Team?

- Instructor
- GTAs
- Preceptors



# What is a Preceptor?



- Motivated and responsible student

- Facilitator

- Peer Tutor

- Classroom leader



**So, who can be a  
preceptor?**



# Why should I Become a Preceptor?

- Personal involvement with your course - YOU can help make it a better course through your input
- Learn new professional and leadership skills
- Opportunity to excel in the course !!
- Get to know your professor & TA's as mentors and future references for applications, jobs, etc.
- It's FUN!!!!



# Preceptor Compensation?

Preceptors receive 3 units academic credit by enrolling in one of the following courses:

LASC 197a: Preceptor Training  
(for first-time preceptors)

LASC 397a: Independent Study Preceptorship  
(for returning preceptors)

**OR preceptors can receive HONORS  
CREDIT in NATS 101 as part of an  
HONORS CONTRACT . . .**

# LASC 197a: Basic Preceptor Training

- Several sections offered at various times
- Sections meet for 2 hours once a week for 9 weeks



*"Putting People Back  
into Education"*

**Training in Communication Skills,  
Group Dynamics and Leadership**



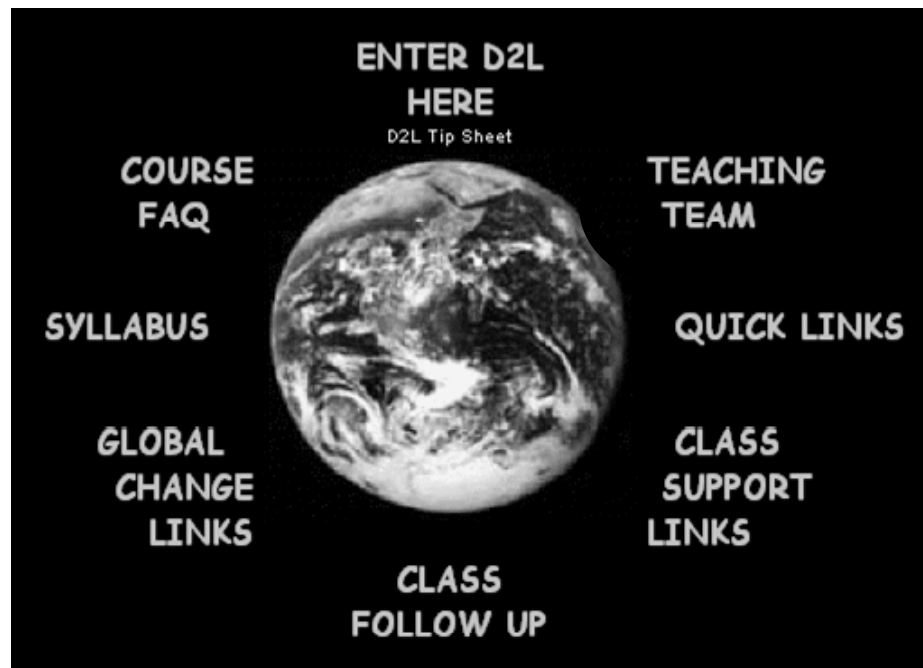
# LASC 397a: For Advanced Preceptors

- Gain practical leadership and problem-solving experience
- Learn skills that will help you in all aspects of your life



# So, how do I sign -up?

See the PRECEPTOR SECTION  
under TEACHING TEAM on our NATS 101-GC  
WEBPAGE:



<http://fp.arizona.edu/kkh/nats101gc/how.htm>



## **IMPORTANT ANNOUNCEMENTS (cont.)**

**Disability Resource Center (DRC) students & SALT students** – make an appointment in the next two weeks with Dr. H so she can meet you.

**Trying to ADD the class?**

**Interested in learning more about being a Preceptor?**

See Dr. H after class is dismissed to discuss this.

# **Recap of today's ASSIGNMENTS:**

Here are your first assigned tasks:

- 1. Read & study the Syllabus and the online FAQ (Frequently Asked Questions) Then take SELF TEST and Practice Readiness Quiz (RQ) to test your understanding of the course logistics & policies.**
- 2. Read the short essay “On Science” by Robert Pirsig before class on Thursday 8/26 *(available online as a password protected pdf file on the Webpage under Quick Links)***

***PDF Password = nats101gc***



class website

**To NATS 101-GC website**