

# Laptop Ownership Requirement for Georgia Tech

Student Computer Ownership  
Committee

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# SCOC Membership

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# Outline

- Rationale
- Data
  - Surveys of students and faculty
  - Benchmarking
- Usage/Pedagogy
- Support & Infrastructure
- Recommendation
  - Start in Fall-2008

# Why Laptops?

- “Georgia Tech will define the technological research university of the 21st century and educate the leaders of a technologically driven world.”
- GT Strategic Plan Goal 5: Intelligent Development of Effective Information and Educational Technology
  - Ubiquitous, secure wireless network access will be available to all students, faculty, and staff from any location on the Tech campus.
  - Use **educational technology to enhance the educational experience** of students who are enrolled in Georgia Tech programs inside and outside of the Atlanta campus.
- CoC will require laptops starting in Fall-2007 for CS-1301

# Why make it a Requirement ?

- Enhance Teamwork and Projects
- Lab or Studio usage
  - Analyzing data; writing programs
  - (re)Searching
- Consultation during Office Hours
- Active Learning
  - Small (and Large) classes
- Use during internship, co-ops, or Study Abroad
- Preparation for the “real world”
  - everyone carries and uses a laptop

# Laptops In Classes

- Profs will develop new educational experiences
- Guarantee all students in a class have them
  - Example: CS-1301 will require laptops of CS majors
  - Complication: also taken by College of Science majors
    - Separate section?
- Ultimately, the follow-on CS course will need laptops
  - Grant from Microsoft
  - Puts GT in the forefront of CS education

# Why not?

- Classroom Behavior
  - Attractive Nuisance
- Financial
  - Very small difference at purchase time
  - More susceptible to loss, damage
  - At support time, there are costs to GT
- Expectations will change
  - Students will expect “classroom” usage
  - Profs will have to adapt
- Don't force me to have one

# Attractive Nuisance

- Most common complaint is that laptops are a distraction during lecture
  - Students web surfing, instant messaging, etc.
- The same issue exists with cell phones
- Problem already exists regardless of whether there is a laptop requirement or not
  - 88% of incoming students had laptops in Fall-2006
- Professors are responsible for classroom management
  - and should feel empowered to control their classroom
  - and enforce an explicit "laptops down" policy, unless the laptops are specifically needed



# Laptop Ownership Data (ResNet)

<b>Laptop Ownership – Housing Freshman</b>		
	<b>Fall 2005</b>	<b>Fall 2006</b>
Laptop	619	778
Total	785	880
<b>Percent</b>	<b>78.9%</b>	<b>88.4%</b>

Out of approximately  
2000 Freshman

96% of Freshman live  
in the Residence Halls

<b>LAPTOP OWNERSHIP</b>			
<b>ResNet Satisfaction Survey</b>			
1/3 Fresh, 1/3 Soph, 1/3 Upper Class & Grad			
	<b>Spring 2004</b>	<b>Spring 2005</b>	<b>Spring 2006</b>
Laptops	34.3%	45.7%	57.8%

25% Response Rate

50% of undergrads  
live on-campus

# ResNet Survey (Freshmen)

Cost of Machine, with monitor (Excluding printer and peripherals)				
	Fall 2005		Fall 2006	
\$999 or less	94	11.97%	130	14.77%
\$1000-\$1499	262	33.38%	285	32.39%
\$1500-\$1999	198	25.22%	225	25.57%
\$2000-\$2499	126	16.05%	134	15.23%
\$2500 or more	75	9.55%	66	7.50%
Don't Know	30	3.82%	40	4.55%
Total Responses	785		880	

For reference the laptop that ResNet recommended to students in Fall 2006 had a cost of \$1,310.

It had a full 3 year warranty and included Microsoft Office

# Another ResNet Survey (Spring 2006)

- I would prefer that Georgia Tech require **specific computer** models instead of having minimum computer specifications

Strongly Agree	14	2%
Agree	40	5%
Neither agree nor disagree	124	14%
Disagree	216	25%
Strongly Disagree	475	55%
Total Responses	869	

- Georgia Tech should **require** that all students purchase a **notebook** computer

Strongly Agree	24	3%
Agree	52	6%
Neither agree nor disagree	174	20%
Disagree	262	30%
Strongly Disagree	357	41%
Total Responses	869	

# OIT Log-in Survey: Jan-2007

- Users responded to two questions and answered yes or no to each question.
- Of the 8418 responses received –
- Question #1 (favor making laptop ownership a **requirement**)
  - 34% responded with YES
  - 66% responded with NO
- Question #2 (people who think that having laptops would improve the classroom experience)
  - 37% responded with YES
  - 63% responded with NO
- **BUT, 80% already own laptops !!**

# Faculty Survey

- Conducted in Nov-2006
- Small Response: 43
- Looking for Pedagogical Factors
- Looking for “first adopters”
  - Question 3: Would significant class activities that use laptops be part of the curriculum in your courses?

Yes 14

No 28

No response 1

# Exploitation by Faculty

- Question 10: What **new computer-based instruction** would you introduce in your class content if students were required to own laptops? Open-Ended Response

Total responses	35/43	
None	13	
(Hands-on) Simulations	2	
Interactive demos	4	
Interactive design	1	
Quiz, questions	5	
Short tutorial	1	
Coding in class	2	
Numerical problems	1	
Laptops don't change what we do or how students learn		3
Won't modify material, or change pedagogy (in short term)		3

# Faculty: For or Against ?

- Question 11: We are considering a **mandatory** student laptop requirement for fall of 2008.
  - Do you favor or oppose this initiative?
  - If you either favor it or oppose it on the basis of issues that are not touched upon above, please explain.

Total responses 39/43

Strongly Favor	3	
Strongly Oppose	3	
Favor	13	
Oppose	14	
Neutral	3	
Optional	3	(laptop or desktop)

# LAPTOP OWNERSHIP TRENDS AMONG PEER INSTITUTIONS

California Institute of Technology

Carnegie Mellon

Cornell

Johns Hopkins

MIT

North Carolina State

Northwestern

Penn State

Purdue

Stanford

Texas A & M

University of California Berkeley

University of California Los Angeles

University of Florida

University of Illinois – Champagne

University of Michigan

UT Austin

University of Washington

Virginia Tech



## LAPTOP OWNERSHIP TRENDS AMONG PEER INSTITUTIONS

Laptop Ownership among undergraduates at our peer institutions follow a similar trend to Tech, with an average of 83% of all undergraduates owning a laptop in 2005. The trend is upward.

While all of our peer institutions do not mandate laptop ownership by undergraduates, many graduate programs now require mandatory laptop ownership.

## LAPTOP OWNERSHIP TRENDS AMONG PEER INSTITUTIONS

Several peer institutions have laptop rental programs and offer full technical support for all students who own laptops.

Most peer institutions do not have pooled insurance policies for students who own laptops. Laptop security is the students responsibility.

# Support: Impacts OIT & Housing

- Support for problems affecting academic use of laptops
- Length of time to diagnose/resolve problems
- No on-site laptop repairs - what if damaged/stolen?
- **Loaners needed (or Daily Rental)**
  
- Validation for installed licensed software (proof of purchase)
- Replacing or upgrading operating systems - who/how?
  
- Data recovery parameters
- Liability issues working on personally owned equipment
  
- **Increased workload on central and local IT staff**
- Since April, OIT Resource Center has had increase of 6000+ requests
- Training for frequently encountered problems
  
- **Upgrade wireless infrastructure**
- **Upgrade backup possibilities**

# Status Quo

- Existing Student Computer Ownership Program
  - Choice: desktop or laptop
    - SCOC Brochure already encourages laptops
  - Individual units can add their own requirements above and beyond the SCO policy
  - More students are buying laptops
    - Ownership → 99 %
  - Encourage Schools, or Colleges to require them
  - **DOWNSIDE: can't use them in courses**

# Recommendation

- **Universal requirement starting in Fall 2008**
  - All undergrads would have them by 2011
    - i.e., the class of 2012
  - Continue to allow diversity of machines
  - Requirement enables enthusiastic Profs to design new course activities around the laptops
  - Other benefits
    - MS campus agreement

# EXTRAS

- The following are backup slides

## Goal 5: Intelligent Development of Effective Information and Educational Technology

- Strengthen our position and profile as a leader in educational technology.
- Ubiquitous, secure wireless network access will be available to all students, faculty, and staff from any location on the Tech campus.
- Provide information technologies that enable Georgia Tech to be a leader in education, research, public service, and administration.
- Develop and maintain a communication and data network that is comparable to that of the most innovative institutions.
- Link continuing education to strategic planning so that lifelong learning is accessible by Georgia Tech alumni and professionals who can benefit from a Georgia Tech education at any stage of their careers.
- Use educational technology to enhance the educational experience of students who are enrolled in Georgia Tech programs inside and outside of the Atlanta campus.
- Continue to research and use innovative technologies that effectively enhance the programmatic content of the student learning experience.
- Assist Georgia's K-12 schools with the implementation of advanced technologies where appropriate.
- Continue to participate in and provide leadership for statewide, regional, and national efforts to develop technology infrastructure and technology policy that provide Georgia Tech faculty, students, and researchers with competitive advantages in the pursuit of education, research, and service to the citizens of the state of Georgia.

# SCOC Survey, Nov-06 Summary

- Question 1: In what ways did the student computer ownership policy, together with the networking of classrooms and dorms, have on the way you teach your classes?

No response 5  
No or little change 14  
Useful for coding 5  
Distraction 5  
Critical/Essential 2  
Don't support policy 1  
WebCT, distribution of course material 10  
School clusters 2  
No excuses for computer assignment, open-ended HW, wide access possible

Sometimes there can be a negative effect as students check email or surf the web during class (just like we do during meetings :)

Wirelessly networked laptops are an 'attractive nuisance' distraction in any formal class to large for the instructor to have one-on-one student relationships.

- Question 2: Were some of these changes a 'first step' that could be carried further with a laptop requirement? Explain.

No response 5  
No 16  
Yes 5  
Maybe/no idea 3  
Distraction 4  
Financial burden 2  
No improved quality 2  
Change the way we teach, better office hours, active learning

Right now I am pausing to consolidate the gains from the previous steps

There is strong concern that students are losing the ability to pay attention and do RIGOROUS thinking, analysis, derivation and experimentation, instead substituting superficial browsing or 'going through the motions'.

The laptop computer cannot think, yet. So the answer is, no, not at present.



# SCOC Survey, Nov-06 Summary-2

- Question 3: Would significant class activities that use laptops be part of the curriculum in your courses?

Yes 14  
No 28  
No response 1

- Question 4: What would be the effect on the educational process in your courses if every student were required to own a laptop and could bring it to class? Please explain.

- Question 4a: Negative effect

Total responses 13 (out of 43)

Distraction 11 (out of 13 responding)

- Question 4b: Somewhat of a negative effect

Total responses 11/43  
Distraction 9

Negative only if it causes students to reject GT

Current laptop use during lectures is a mixed blessing.  
Students can and do pursue other amusements rather than listening or participating in classroom discussions

# SCOC Survey, Nov-06 Summary-3

- Question 6: No effect      Total responses      7/43  
Some look at my lectures notes on their laptop  
Would assign work that required programming, but no specific benefit from laptops  
Distraction by related notetaking, searching or surfing  
Students might take notes using it or check their e-mail  
Laptops are expensive.
- Question 7: Somewhat of a positive effect      Total responses      10/43  
No excuses for correct presentation format  
More flexibility in assignments and lectures  
Paperless  
Conceivable increase in collaborative work in class.  
Ability to follow lectures and notes on-line  
Students could search the literature  
Interactivity, shared viewing of websites  
It depends on the class  
Could well expedite the taking of notes  
Ultimately easier for everyone  
Hands-on simulations in class
- Question 8: Very positive effect      Total responses      7/43  
Live and custom media access  
Interactive learning/lectures, collaboration      4  
Distributed simulations, but can't get seminar room  
Use of software      2

# SCOC Survey, Nov-06 Summary-4

- Question 9: What network resources would be needed in order to effectively integrate laptops into your courses? e.g., lots of bandwidth to support a lab or a large classroom, or just enough to support one-on-one discussions during labs and office hours. Open-Ended Response

Total responses 34/43

None	8
Don't know	3
Not applicable	4
More bandwidth	2
Need enough for large class	8
Don't like the requirement	1
Not sure how it helps	2
Distraction already	1
Power outlets	1
Display from student laptops	1
Won't improve education	2

Network density is hard to estimate, esp for wireless. I'd expect DHCP or Lawn (wired) to be available in classrooms and team areas, as well as high-density wireless for common areas. Should support lots of adhoc, mobile users who require continuous connectivity.

# SCOC Survey, Nov-06 Summary-5

- Question 10: What new computer-based instruction would you introduce in your class content if students were required to own laptops?  
Open-Ended Response

Total responses	36/43
None	13
(Hands-on) Simulations	2
Interactive demos	4
Interactive design	1
Quiz, questions	5
Short tutorial	1
Coding in class	2
Numerical problems	1
Laptops don't change what we do or how students learn	3
Won't modify material, or change pedagogy (in the short term)	3
Another monetary hurdle for a poor, working or middle class kid	

Because once Pandora's box is opened, I must use online resources during class to maintain relevancy to my students. I envision at least an elaboration on Georgia Tech's contemporary and wirelessly interactive chemistry classes where students can be quizzed and scored in real time on content provided seconds ago. Thus, dynamically adaptive content can be presented. But, the instructor will need to be able to dance a bit faster. I envision different approaches being needed for large versus small classes.

I would use them for in-class responses to questions, where students are REQUIRED to answer questions. A silent, non-intrusive improvement on the PRS idea, but with much more potential. Many more 'Quizzes' could be implemented.

# SCOC Survey, Nov-06 Summary-6

- Question 11: We are considering a mandatory student laptop requirement for fall of 2008. Do you favor or oppose this initiative? If you either favor it or oppose it on the basis of issues that are not touched upon above, please explain.

Total responses 42/43

Strongly Favor	3
Strongly Oppose	3
Favor	13
Oppose	14
Neutral	3
Optional (lap/desk)	3

GREATLY OPPOSE! This questionnaire stinks and not worth my time. Oppose. Would rather they be required to think.

I oppose this policy. This is being couched as an opportunity. But we are really discussing creating a regulatory requirement (probably an unfunded one). The burden of proof should be in demonstrating to me and to the students how this makes the educational experience better. At present, laptops can be useful in the classroom, but they can also be a distraction.

I am OK with this, but will ban the use of laptops in some classes in order to get them to PAY ATTENTION. (Otherwise classes would be little better than Faculty Meetings....)

With one exception, all progressive and competitive tendencies would point towards student laptops being ubiquitous. The exception would be if Georgia Tech made a commitment to have better instructor-student personal relationships. However, this is not in the character of Georgia Tech's recent trajectory.

Favor. However, there needs to be uniformity (all Windows or all Mac, not mixed) otherwise there is no way we can develop demos and labs for both. We also need policies about what is allowed in classrooms. For example, we could block e-mail and instant messaging TCP/IP ports in classrooms.

# Expectations of Users (by GT)

- Students need to avoid altering laptop that increase compromise opportunities
  - Legal software/OS installations
  - Obtain and installing print drivers
  - Installation of most current service packs
  - Installation and maintenance of current anti-virus and firewalls
  - Perform regular backups
- Purchase of an extended warranty (\$\$\$)
- Insurance to cover damage/theft (\$\$\$)