

# Final Report - Aero/Astro Graduate Admissions 2011

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Massachusetts Institute of Technology  
Department of Aeronautics and Astronautics  
Graduate Admissions Committee  
Academic Year 2010-2011

September 30, 2011

## 1 Committee

- Prof. Hamsa Balakrishnan - systems sector representative
- Prof. David Darmofal - co-chair, Associate Department Head
- Prof. Mark Drela - vehicle sector representative
- Prof. Jeff Hoffman - systems sector representative
- Prof. Paul Lagace - vehicle sector representative
- Prof. Nancy Leveson - systems sector representative
- Prof. Manuel Martinez-Sanchez - vehicle sector representative
- Ms. Beth Marois - graduate program administrator
- Prof. Nicholas Roy - co-chair, information sector representative
- Prof. Qiqi Wang - vehicle sector representative
- Prof. Moe Win - information sector representative

## 2 Summary

- This year we received 464 complete applications. We admitted 84 candidates (18.1% admission rate) and of those 64 accepted our offer (73.5% yield) and 1 deferred. (These numbers do not include LGO students.)
- The AY 2010-2011 admissions cycle saw two process changes. Firstly, the previous Collegenet software was happily abandoned in favour of the EECS Gradapply software. Secondly, the GAC activities were streamlined to require a third review only to break ties and moved to electronic communication, eliminating the need for weekly meetings. All of these changes appear to have been received favourably.
- The primary recommendations for 2011-2012 are as follows:
  1. Change the language on the website to ask students to enter their complete transcript, rather than only entering relevant courses.
  2. Bring the GAC membership up to nine full members.
  3. Consider discontinuing fast-track admissions for one year to see if this simplifies our process.

### 3 Results of the AY 2010-2011 Admissions Cycle

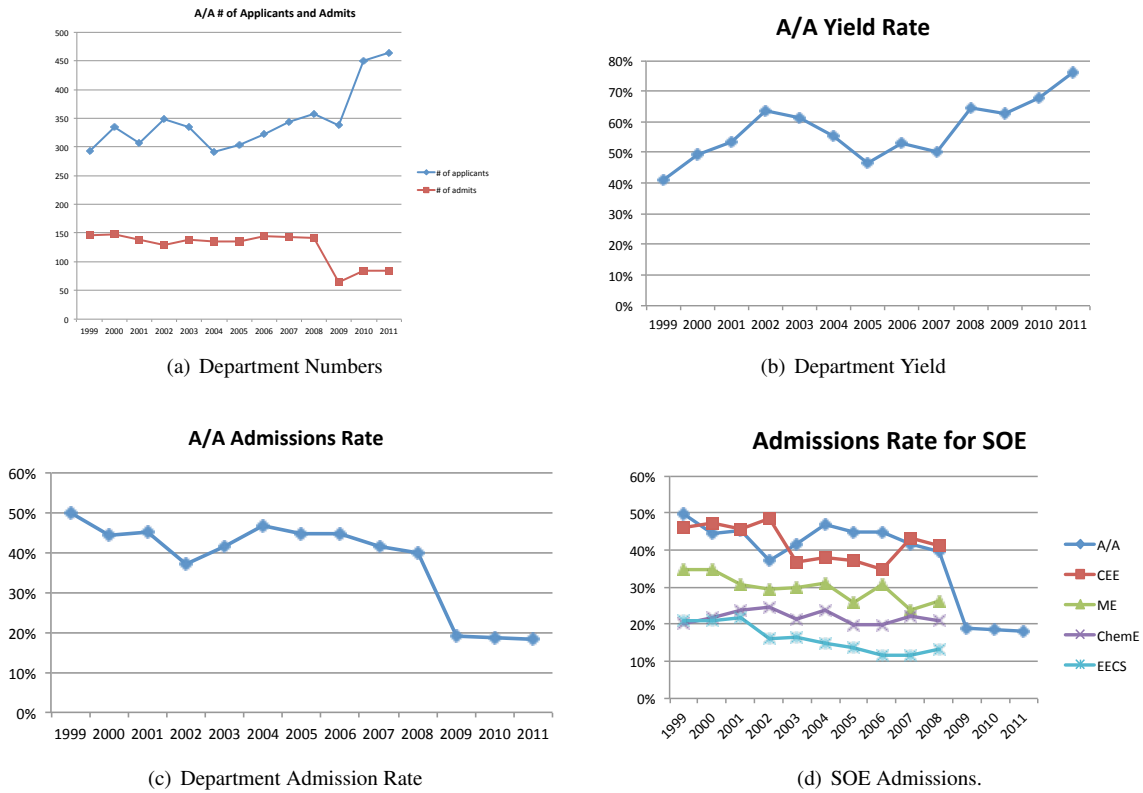


Figure 1: MIT Aero/Astro 2010-2011: (a) Applications received and students admitted. (b) Admissions ratio (c) Yield (d) School of Engineering: average admissions ratio and yield

<b>2010-2011</b>	Admits	Accepts	Yield
RATING < 2	0	0	NaN
$2 \leq \text{RATING} < 3$	10	10	100%
$3 \leq \text{RATING} < 3.7$	51	38	75%
RATING $\geq 3.7$	23	16	70%
Totals	84	64	76.2%

Table 1: Departmental admission and acceptance numbers for 2010-2011 by candidate evaluation scores.

## 4 Major Issues

### 4.1 Transcripts

The switch to the EECS Gradapply website led to issues with handling transcripts. The assumption was that the students would enter their transcripts manually into the Gradapply website, and then provide backing paper copies. Unfortunately, the language in the application asked the students only to enter the data from their *relevant* courses, rather than all courses. As a result, we provided PDF versions of the complete transcript of each applicant via a different website. This was labour-intensive.

#### Recommendation:

- Starting in 2011-2012, the language will be changed to ask for the complete transcript electronically and in chronological order.

### 4.2 GAC members

The GAC this year had 8 members (not including the associate department head or the graduate program administrator) to read 446 folders (not including 18 summary rejects). Since every folder requires two GAC reviews, and some require a third, GAC members were assigned between 102 and 131 folders. In contrast, in 2008-2009, 6 full members read 336 folders. The number of folders to read has increased by 33% but the committee only grew in size by 25%. In order to have all folders read by January 31, 130 folders seems to be close to the practical limit for faculty. Travel also created issues, necessitating the emergency addition of an extra GAC member. It is more than possible that the application numbers will continue to rise in the future.

#### Recommendation:

- Increase the number of GAC members to 3 per sector, although at 9 full members, this is more than a quarter of the department.

If the application numbers continue to rise, a third possible recommendation is to move the application deadline ahead by two weeks to December 1st.

### 4.3 Fast tracks

A summary of the current GAC policy for fast-track applicants is as follows:

- We give early admission (fast-track) applicants who are so strong that we want to send a signal to them that they are highly desired, in order to improve the yield of these applicants.
- The cost of a fast-track is that:
  - these applicants will be admitted without explicitly being compared against the other applicants in the sector meeting;
  - other faculty have one fewer chance to give an opinion;
  - by allocating one of our slots to a fast-track student, we lose a slot for the other students at the sector admissions meeting.
- If multiple faculty are interested in a fast-track student, then all interested advisors will appear in the admission letter to the student. With respect to funding, what the department has often done in the past is utilize department funding in some manner to make the offer while giving the student some flexibility to choose.

This year, 10 students were admitted as fast-track students. Fast-track students received an offer of admission and funding early in the process. In previous years, these students had also been invited for a departmental visit earlier. The intent of this process has been to make these highly desirable students feel valued and welcome in the department,

and ideally extract a commitment before other schools. However, the data and yields from previous years indicated that the out-of-phase visit for these students was not as positive experience as the full open house and led to lower yields. As a result, the fast track students continued to get early offers of admission, but were asked to attend the regular open house with the other admitted students.

Table 2 allows us to compare the yield of fast-tracks compared to the other admissions offers for the three years we have made fast-track offers, and also to the previous years. It is not clear that fast track offers are increasing our yield of the very best students. Even if we assume that last year was an aberration, the data suggests we have historically been at 50% yield for our best students, with or without fast-track offers.

The GAC policy acknowledges that there is a cost to fast-track admissions, and the overall admissions process may be simplified by eliminating fast-track admissions. There would be no need to first ensure that all relevant faculty have seen the folder by the time the admissions offer is made. Additionally, fast-track admissions complicate the sizing decisions that are made prior to the sector meetings. We have no data to show that the fast-tracks create a real problem for us, but one possible strategy for getting this data is to eliminate fast-track admissions for one year. We would do this with the goal of examining the effect on our internal processes and also examining the yield of the best students in finer detail.

Year	Yield of Fast track offers	Yield of remaining offers
Fall 2011	50% (5/10)	75% (59/74)
Fall 2010	28% (2/7)	71% (55/77)
Fall 2009	53% (8/15)	65% (32/49)
	Yield of top 10%	Yield of remaining offers
Fall 2008	50% (7/14)	66% (85/128)
Fall 2007	41% (5/12)	51% (67/131)

Table 2: Yield data for the last 5 years. Fast track offers were only started in 2009, so for comparison, the yield data for the offers given to the top 10% of students for 2008 and 2009 is also included.

**Recommendation:**

- Discontinue fast track admissions for one year, and re-assess next year.

**4.4 TOEFL Scores**

A question was raised about our TOEFL cut-off, which is currently 100. At this level, 18 students were summarily rejected based on TOEFL scores below this threshold. Other departments (ESD, EECS) have different cut-offs and many do not accept the TOEFL but require the IELTS test.

Post-season analysis showed that the performance of our students we have admitted (in terms of GPA, academic warning) in the last two years does not appear to be correlated with TOEFL score, but the need to take remedial English classes is somewhat correlated. Because the students with low (but acceptable) TOEFL scores appear to succeed at the same rate as other students, there is currently no evidence to suggest our current threshold is too low, and there may be a reason to lower it. Lowering the threshold below 90 is not recommended since this is the minimum TOEFL score required to obtain a US visa.

**Recommendation:**

- Starting in 2011-2012, the chair of the GAC will examine the folders that are below the TOEFL threshold to ensure that an otherwise exemplary student is not being rejected inappropriately.

**4.5 Relationship to other programs**

Aero/Astro is the home department for some students enrolled in programs who cannot formally accept students. LGO is the only example of this, although there have been other such examples in the past. As a result, the GAC was asked

to admit students into those programs who we had not planned to accept for reasons such as fit. However, there are very few of these students, they do not interact with the department in any meaningful way, and do not appear to represent a resource load or an increased responsibility on our part.

**Recommendation:**

- The GAC chair in 2011 should meet with the other departments to clarify Aero/Astro's responsibilities to any students we admit on their behalf.

## 5 Minor Issues

There were some minor issues that can be addressed easily.

- The GRE scores in some cases arrive from MIT central processing and arrive late, delaying the reading of folders as they are not complete.

**Recommendation:** After January 1, for any folders that are complete except for GRE scores, the graduate program administrator will start sending those folders to the GAC for review.

- There are a few minor website issues related to Gradapply:
  - Applicants are responsible for ensuring recommendation letters arrive on time, and there is currently no practical way for the department to send reminders.
  - The Gradapply website currently lists the applicants based on their most recent school attended, which is confusing when a student was on exchange for a semester.
  - There are some additional search mechanisms that would be helpful.
  - The research areas for each student are currently abbreviated and difficult to read.

**Recommendation:** Consult with the Gradapply website maintainers, Profs. Morris and Kaashoek on these issues.