There are some basic concepts that pilots need to grasp in order to become a pilot that can fly in the real world. The question that begs to be asked is whether flying at WMU is the real world. The answer really depends on what our pilots will do with their pilot certificates once they are no longer in the safe comforts of our controlled flying environment. Will our graduates be in general aviation where they are making the decisions, or will they be in another controlled environment where someone else makes the decisions for them? You should keep this question in mind as you are training your students. Keep in mind, they could someday fly in the real world.

In the world of corporate, airline and military aviation, the pilot is supported by a large number of people who do not fly. These people get the weather, computer the weight and balance, estimate the performance of the aircraft, file the flight plan, deal with maintenance issues and probably make coffee for the pilot. The pilot shows up and verifies that everything is in order and that the flight can be made safely. Sometimes you have to wonder why a senior captain is making $250,000+ to just sit in a special chair and push a few buttons.

General Aviation, on the other hand, requires the pilot to get the weather, compute the weight and balance, estimate the aircraft performance, file the flight plan, deal with maintenance issues and probably has to make the coffee. Of course, this pilot is paid quite well to sit in a special chair and perform this easy job. I know that the job of a general aviation pilot is quite easy since most pilots have a second job to take up their free time. Jokes aside, a GA pilot is responsible for performing all aspects of the flight.

You can argue that WMU is GA but with a twist. On EoC checks, most pilots have no clue how to calculate density altitude. They never had to do it for their flying. WMU is a highly controlled environment where many decisions about flying have been taken away from the pilot. If you do not believe me, then consider how much fuel is required on cross-country flights. Why should a pilot do fuel planning if full tanks are required for every cross-country flight? When was the last time that your student planned how much runway is required to depart and land at Battle Creek? With 10,000’ of runway, just about every aircraft in the world can land and depart here (including the Space Shuttle). How about landing on a predetermined point on runway 23? Why bother with landing distance calculations since all of our training aircraft can land in 3,000’ of runway or less? This lack of decision making can be seen in the air. On a EoC check, a pilot landed 7,500’ down runway 23. A high approach, fast approach speed and slow rate of descent all cumulated into landing with 2,500’ of runway remaining. With regard to going solo, your student has a special card with minimum ceilings and visibilities for various operations. This is important for student pilots to help them gain the ability to make the go/no-go decision. But even your commercial students have this same card. All solos are approved for flight by the SOF. This was meant to allow the current SOF the knowledge of who was flying solo. It was never meant to take the place of making a decision for the student. Ideally, the SOF should say yes to every solo flight because the student has made the correct decision to go flying. This is not happening. Students are just filling out the paper work, getting the weather brief and asking the SOF if it is ‘ok’ to go flying; no decision has been made by the student.

You should be training your student to fly in the real world where they have to make all of the decisions about the flight. Take yourself out of the loop and force the student to make the decisions. They should also understand why they are calculating certain numbers and use these numbers to make decisions. Get your students out of the concept of “ticking the box” to go flying. The day that they need these skills, will they have them and be able to use them? It is up to you to make sure that they do.
The Back Side

Plogs

What is the importance of calculating Density Altitude? This question will be asked to your student undergoing my EoC oral. Most pilots show up without ever calculating this number for any of their flying at WMU. So on the day of their oral, they leave it blank since they do not know how to calculate it. As if that was not bad enough, when I ask them what density altitude means, at least half of them cannot define it.

If your student has not calculated it prior to flying, then they are missing out on some important information. Flying in the Battle Creek area at noon in the hot summer is not the same as flying out in the mountains in Colorado. In general, students have not been prepared for the oral by their instructors.

The significance of density altitude has to do with how well the airplane will perform when the pressure and/or temperatures are not standard. Many students can use the takeoff distance chart in the POH, but they are not correlating the number with the atmospheric current conditions. Instead, they are treating the calculation as another “tick in the box”; something to do prior to flying. What needs to be correlated is that higher temperatures trick the airplane into thinking that it is at a higher altitude. Lower pressures will do the same thing. The airplane is physically at an altitude (airport elevation) but it will fly like it is at a different altitude (based on temperatures and pressures that day).

On instrument orals, I will ask the student to make a decision based on the aircraft’s ability to climb. The temperatures and pressures of the day will affect rate of climb. Can your student correlate the aircraft’s rate of climb in feet per minute to a departure procedures minimum climb gradient expressed in feet per nautical mile? The student needs to be able to calculate density altitude (pressure altitude and non-standard temperature), aircraft rate of climb (based on the density altitude) and convert climb gradient. What is the minimum climb gradient for an instrument departure procedure? Where would a student find out if a non-standard gradient is required? How will the student convert feet per nautical mile into feet per minute?

Make sure that your student can perform these calculations and conversions. They should be doing these on a regular basis. Does that mean prior to every flight? That will be up to you and your student. Bottom line, if your student cannot do it on the EoC oral, then expect the student to be returned to you with a failing grade for the oral. See me if you need any help with these topics.

Quiz Time

What is the obstacle clearance gradient in feet per nautical mile?

If a procedure required 450’ per nm, then what rate of climb in feet per minute is required to comply with the procedure (assume a 120k ground speed)?

If an aircraft cannot comply with the climb gradient list on the departure procedure, then what should a pilot do?