

# Math Major Advising Tips

## 1. Select a major within the department – 4 choices

The first time you meet with your advisor make sure you understand the choices.

- **Math BA –declare a minor also**
- **Math BS**
- **Math BA with an actuarial concentration – declare a minor also**
- **Math BS with an actuarial concentration**

## 2. Math major core and associated requirements- Tips for all math majors:

- 19 hours of “core” mathematics – Calculus 1, 2 and 3, Linear Algebra and Discrete Mathematics I are required.
- Associated requirements are COSC 10403 or 10503 and two of PHYS 20474, PHYS 20484, ECON 40313, COSC 20203.
- Take either of COSC 10403 or 10503, they are *very* time consuming classes! Note that COSC 20203 has COSC 10403 as a prerequisite.
- If you take Physics to satisfy your Associated requirements, be sure to take calculus based Physics I and/or II – PHYS 20474 and 20484. If you take physics off campus, it must still be calculus-based with a calculus prerequisite. You must also take another NSC course in a different Department (not Astronomy).
- Economics 10223 and 10233 are good Core choices in case you may want Actuarial track. Furthermore, in general, Economics is a good second area of study for math majors, as are Physics and Computer Science.
- Need to complete 42 hours of upper division (30000+) classes at TCU.
- Last 30 hours must be at TCU.

## 3. Major and Minor –general tips:

- **WARNING:** Courses taken in the major, minor, and associated requirements cannot be taken P/NC.
- Declare major and minor on my.tcu.edu.
- **Declare major/minor ASAP.** Majors and minors require completion of the degree plan that is in effect at the time of your declaration—not the time of your enrollment at TCU. Waiting to declare makes you subject to catalog changes in requirements.
- **File a formal degree plan in the CSE Dean’s office ASAP after completion of 54 credit hours.**
- **File an intent to graduate form a full two semesters before anticipated graduation.**
- Check that summer classes will transfer in with the appropriate credits and core credit, *before* the classes are taken. **This is your responsibility.** Courses in the Texas Common Course Numbering System that are transferrable for Core credit are listed at <http://www.admissions.tcu.edu/pdf/TransferCoreGuide.pdf>. **After completing 54 credit hours, all subsequent transfer work may only be taken from an approved 4-year college** (This rule limits the time frame under which

summer courses may be taken at community colleges.) Only 12 hours total may be transferred once you enroll and your last 30 hours must be taken at TCU.

- If you are seeking to teach high school you should minor in Educational Studies – go to the College of Education for co-advising. This is part of the certification process.
- **CORE WARNING:** GA/CA/ CSV /WEM classes *cannot be transferred in.*
- **TRANSFER STUDENT WARNING:** *The 42 hours of upper division credit is a very pressing concern for students who only have two years at TCU*
- Although not a requirement, it is strongly urged that anyone applying for quantitative jobs get certified in Microsoft Excel. Information is at [http://www.neeley.tcu.edu/Academics/BBA/Microsoft\\_Certification.aspx](http://www.neeley.tcu.edu/Academics/BBA/Microsoft_Certification.aspx).

#### 4. BS versus BA tips:

- **The BS requires 40 hours of math** – the 19 core hours of math, MATH 30803 (Prob/Stat), Real Analysis I and Abstract Algebra I, and 12 hours of upper division credit in math. *Be careful choosing electives for pre-teachers and actuarial students.*
- **The BA requires 28 hours of math** – the 19 core hours of math and 9 hours of upper division electives in math. *Be careful choosing electives for pre-teachers and actuarial students.*
- Students seeking a BA must complete a minor and 6 hours of foreign language at the *sophomore* level. (i.e. Spanish 4 or French 4 is final class). International students who have attended high school in their home country with instruction in their native language (other than English) may receive 12 credits of foreign language credit – follow up with Dean Mike Butler at [m.butler@tcu.edu](mailto:m.butler@tcu.edu)
- Most of the time a BA degree offers **actuarial** students more flexibility.

#### 5. Special Tips for students seeking BS in Math

- Watch the course rotation carefully on the upper division electives. Many classes only come up once every two years. Check with the Chair of the Department for the current four-year plan. Ask your advisor to help you plan effectively.
- Take Discrete I, Linear Algebra and Calculus 3 as soon as possible, since these core classes are prerequisites to upper division requirements. Differential Equations may be a prerequisite for certain applied upper division electives also.
- If you will take Differential Equations, do so as soon as possible after Calculus 2
- **WARNING for all BS students:** If you are not convinced you will be able to handle the challenging proof classes of Real Analysis and/or Abstract Algebra, build your schedule so that you have the chance to complete the foreign language and minor requirements needed for the BA.
- **ADVICE for Excellent BS Students** – in order to be considered for election to Phi Beta Kappa, the most prestigious national honor society, you must complete 6 hours of foreign language at the sophomore level.

## 6. Special Tips for Actuarial Students

- Know the list of **associated requirements**: ECON 10223, ECON 10233, ECON 30223, ECON 30233, ACCT 20353, ACCT 40163 and FINA 30153.
- To enroll in certain classes in the School of Business, you **must first declare an actuarial concentration** as their major. If you encounter problems, contact Susan Staples.
- If you may be interested in Actuarial studies, take Economics for your Social Science core classes as soon as possible – preferably in the first year.
- Recognize that only two more classes in ECON beyond the associated requirements are needed to complete an ECON minor, thus the **recommended minor for actuarial students is Economics** – try to get the WEM classes in Econ and select Econometrics, if possible, to fulfill your associated requirement for the Mathematics degree (Econometrics grants  $\frac{1}{2}$  of a VEE credit for the SOA)
- *Take your ECON and FINA classes at TCU*, since these are approved for VEE credit with the SOA (Society of Actuaries)
- The Accounting classes must be completed before the Finance class.
- **Watch the prerequisites list** – MATH 40603 (SOA Exam P class) offered only once every two years requires Calculus 1,2, and 3 as well as MATH 30803 (Fall only!)
- Take MATH 30803 and Calc 3 as soon as possible (see above)
- Once you complete Calculus 2, take Interest Theory (MATH 30603) as soon as possible. It is offered in odd Falls only. This class together with MATH 30623 covers the material for SOA Exam FM. The earlier you take the exams, the better your chances are for summer internships.
- Remember that the Actuarial Concentration requires MATH 30803 (Fall only!!), MATH 30603 (Interest Theory 1 – odd Falls), MATH 30623 (not required for degree, but required to pass the SOA exam- even Springs), MATH 40603 (Actuarial Math-odd Springs), MATH 30853.
- Do not use credits on electives you do not need, in particular note that Diff EQ or Discrete II are not recommended electives, because your list of specialized actuarial classes will cover most or all of the elective slots.
- If you are “too late” in your career to complete the actuarial concentration, but have interest in that career option, Professor Susan Staples can help advise you on a “catch-up” track that will maximize your job potential.
- Go to [www.soa.org](http://www.soa.org), <http://www.casact.org>, and [www.beanactuary.org](http://www.beanactuary.org) for career information

## 7. Special Tips for students seeking high school certificate in Mathematics

- Remember that you need to **apply to the Teacher Education Program** in the College of Education. Meet with an advisor in the College of Education and find out the application procedure.
- You need to complete the Educational Studies minor to fulfill the pedagogy portion of your degree. One of the classes in the minor may be a WEM class.
- **Remember the BA has a foreign language requirement.**
- We recommend MATH 30853 Statistics and MATH 40403: Higher Geometry, covering material tested on the Texas Educator Certification exams.
- Recommended electives include MATH 50073: Math History – This is recommended, but not required by the state. This is a WEM class.