

## Calculus I Ready Pre-Engineering 2-Year Course Plan

Northern Kentucky University

Department of Physics and Geology (includes Pre-engineering and Engineering Technology)  
Use this for the following engineering fields\*: civil, mechanical, electrical/computer, biosystems, mining, materials and industrial. Civil engineering programs at both UK and UL have an environmental emphasis.

Name: \_\_\_\_\_ Anticipated Engineering Degree: \_\_\_\_\_ Date \_\_\_\_\_

**NOTE:** This table is only a planning document, not a degree checklist. Engineering degrees typically do not have minors.

Course ID	Course Title	Hrs.	Sem./Yr
<b>First Semester (Fall)</b>			
PHY 100	Science, Engineering, and Design	1	
MAT 129	Calculus I	4	
PHY 220	University Physics I (calculus-based)	4	
ENG 101	College Writing	3	
Elective or GLY 110	General Education elective or GLY 110 (for civil or mining only)	3-4	
<b>Second Semester (Spring)</b>			
MAT 229	Calculus II	5	
PHY 224	University Physics III	4	
CMST 101	Principles of Speech Communication	3	
Elective or EGT 212 <sup>a</sup> or INF 260	General Education Elective or EGT 212 Comp.-Aided Drafting and Design or INF 260 Object-Oriented Programming I	3	
<b>Third Semester (Fall)</b>			
MAT 329	Calculus III	4	
PHY 222	University Physics II	4	
Elective or PHY 305 <sup>b</sup> or CHE 120/120L	Gen Ed Elective or CHE 120/120L Gen. Chemistry I and Gen. Chem. Lab I or PHY 305 Statics (not required for electrical/computer).	3-4	
ENG 291	Advanced College Writing	3	
<b>Fourth Semester (Spring)</b>			
MAT 325	Differential Equations	3	
Elective or PHY 310 <sup>b,c</sup>	Gen Ed Elective or PHY 310 Dynamics or PHY 360 <sup>b,c</sup> Thermodynamics	3	
ECO 200	Principles of Macroeconomics (or ECO 201, Prin. of Micro-econ.), recommended General Education elective	3	
Electives or CHE 121/121L <sup>c</sup>	Gen Ed Electives or General Chemistry II and Gen. Chem. Lab II (CHE 121 not required for electrical/computer engineering)	4-6	

\* For chemical engineering see an alternative plan (separate handout).

<sup>a</sup> Most engineering programs do not accept EGT 212 for engineering credit; however, the course software tools are identical. For example, UK's mechanical engineering program requires these tools to be taught by a mechanical engineer. Note, this course is useful only for NKU pre-engineers who anticipating a co-op work experience prior to transfer. UK accepts co-op credit from NKU students choosing to co-op near NKU, but contact UK's co-op office for approval.

<sup>b</sup> These physics courses (PHY 305, PHY 310 and PHY 360) transfer as engineering courses at UK and UL under their ABET accreditation. Other schools may not accept these courses as engineering courses. For students pursuing electrical/computer, industrial or materials engineering, PHY 310 and PHY 360 will transfer as engineering supportive electives at UK and UL, but such students could consider INF 260 (Object-Oriented Programming) as well.

<sup>c</sup> PHY 310, PHY 360 and CHE 121/121L are required for the dual-degree option (see next page).

### Dual-Degree option, earning a BA in physics from NKU and a BS in engineering from UK or UL:

In the 2-year plan above, PHY 305, PHY 310 and PHY 360 are accepted for transfer credit as engineering courses at UK and UL. If a student completes these 300-level courses while at NKU along with CHE 121/121L and completes Modern Physics with Lab (PHY 361, PHY 300) and PHY 494 (Physics seminar), then that student is eligible for a BA degree in physics after completing upper level coursework at their engineering school (UK or UL). Interested students should work out details for this option with their academic advisor and NKU's physics department chair. Generally the dual-degree takes 3 years at NKU and then 2 years at UK or UL to complete.

**General Education transfer from NKU to other Kentucky schools:** The table below is taken from *The General Education Transfer Policy and Implementation Guidelines* revised for 2012, from the Kentucky Council on Post-Secondary Education. NKU students who complete all general education course requirements at NKU will have a **General Education Core Certification**. The NKU Registrar's Office affixes a stamp to the transfer student's official transcript to show that the **General Education Core Certification** is completed. Other Kentucky schools must accept this certification for transfer students. However, some engineering degree programs at UK or UL may have *one* additional course classified as Gen Ed that must be taught by their engineering faculty – such a requirement must be taken after completing transfer. Transfer students who do *not* complete the entire core certification, can still complete one or more of the five categories specified in the table below (in *italics*) and other Kentucky schools must accept individual categories as completed.

**Transfer to Non-Kentucky schools:** Transferring to a Non-Kentucky school requires that the NKU student become aware of the degree requirements at the receiving institution and plan accordingly. This applies to both general education course requirements and engineering requirements.

<b>STATEWIDE GENERAL EDUCATION CORE</b> <i>(Effective Fall Semester 2012)</i>
Pursuant to the Southern Association of Colleges and Schools' Commission on Colleges (SACS-COC) <i>Principles of Accreditation</i> Core Requirement, this policy requires a minimum of 30 unduplicated semester credit hours or the equivalent (may include a SACS justification for fewer hours) to meet the general education component of a baccalaureate degree. Student-learning outcomes in each category must be met through courses identified within each category.
<b><i>Communications – 6-9 hours</i></b> <b>Written Communications (WC)</b> <b>Oral Communications (OC)</b> Each written or oral communication course must meet multiple student-learning outcomes,* including the student-learning outcome specific to written or oral communication.
<b><i>Quantitative Reasoning (QR) – 3-6 hours</i></b> Each quantitative reasoning course must meet all the student-learning outcomes,* which reflect the possibility of courses from mathematics and/or statistics.
<b><i>Arts and Humanities (AH) – 6-9 hours</i></b> At least two courses must be taken to meet the student learning outcomes.*
<b><i>Natural Sciences (NS) – 3-7 hours</i></b> Each natural science course must meet all the student-learning outcomes.* At least one course must include a hands-on project using scientific principles whether offered in a lecture or laboratory setting (SL).
<b><i>Social and Behavioral Sciences (SB) – 6-9 hours</i></b> At least two courses must be taken to meet the student learning outcomes.*
<b>CERTIFICATION LEVELS:</b>  <b>General Education Category Certification:</b> Completed at least one but not ALL of the categories listed above.  <b>General Education Core Certification:</b> Completed ALL of the categories listed above.  <b>General Education Full Certification:</b> Completed ALL of the categories listed above PLUS any additional general requirements(s) of the sending institution.