

GIFT Paper: Using Proactive Advising in a First-Year Introductory Engineering Course

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Introduction and Methodology

According to Woolston (2002), advising undergraduates in engineering education is a challenge and is an interpersonal dynamics problem to be solved by improving the quality of face-to-face interaction between individual students and individual faculty [1]. The Challenges of Academic Advising (The Chronicle of Higher Education, 2010) discusses that a function of academic advising is to help students become independently functioning adults who take responsibility for their own progress [2]. In this study, a proactive advising method has been implemented to first-year civil engineering students in an introduction to civil engineering course, using face-to-face advising practices and spreadsheet technology. Proactive advising involves a variety of intensive interactions with students to increase probabilities of success, including the deliberate intervention to enhance student motivation, using strategies to show interest and involvement with students, and approaching students before a situation develops [3]. This course provides a survey of the different disciplines within civil engineering and includes several lectures on the use of spreadsheets. The instructor also serves as the faculty advisor of all first and second year civil engineering students. An early assignment requires students to create a spreadsheet that tabulates a semester-by-semester graduation plan. Figure 1 shows the assignment template and the problem statement is “Create a spreadsheet that tabulates the courses you plan to complete in your path to graduation, using the given template. Refer to the university Academic Catalog for courses labeled GER, CE Major Elective, and Program Option. Schedule an appointment with me next week to meet to discuss in person your path to graduation.” The faculty member meets with each of the students twice per semester to diagnose student progress and degree completion, requiring updates to the spreadsheet as needed.

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | | | |
|----|--|--------------------|---|---|-------|-------------------------------------|------------------------|---|---|---|----------------------------------|-------|-------------------|-----------------------|---|----------------------------------|---|---|---|-------------------|------------------------------|---|---|---|-------|-------|-------|----|
| 1 | FRESHMAN YEAR - Semester I | | | | | SOPHOMORE YEAR - Semester I | | | | | JUNIOR YEAR - Semester I | | | | | SENIOR YEAR - Semester I | | | | | | | | | | | | |
| 2 | CE 110 | Intro to CE | | | 2 | CE 225 & Lab | Geomatics & Lab | | | | | 4 | CE 310 | Design of Steel Str | | | | | 3 | CE 400 | The Complete Engineer | | | | 3 | | | |
| 3 | CE 111 | CE Graphics | | | 3 | CE 201 | Statics | | | | | 3 | CE 313 | Hydrology | | | | | 3 | CE 429 | Envir. Engineering II | | | | 2 | | | |
| 4 | ENG 111 | English Comp. I | | | 3 | CE 210 | Mech. of Mat. | | | | | 3 | CE 322 & Lab | Soil Mechanics & Lab | | | | | 4 | CE 431 | Senior Design Project I | | | | 2 | | | |
| 5 | Math 131 | Calculus I | | | 3 | MATH 231 | Differential Equations | | | | | 3 | CE Major Elective | | | | | | 3 | CE Major Elective | | | | | 3 | | | |
| 6 | BIOL 105 | Envir. Biology | | | 3 | PHYS 251 & Lab | Physics 2 & Lab | | | | | 4 | GER | | | | | | 3 | Math Elective | | | | | 3 | | | |
| 7 | CBU 101 | Orientation to CBU | | | 0 | | | | | | | Total | 17 | | | | | | | GER | | | | | 3 | | | |
| 8 | GER | | | | 3 | | | | | | | | | | | | | | | CE 489 | Licensure and Certification | | | | 0 | | | |
| 9 | | | | | Total | | | | | | | | | | | | | | | | | | | | Total | 16 | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | FRESHMAN YEAR - Semester II | | | | | SOPHOMORE YEAR - Semester II | | | | | JUNIOR YEAR - Semester II | | | | | SENIOR YEAR - Semester II | | | | | | | | | | | | |
| 12 | CE 113 | CE Analysis | | | 2 | CE 212 | Structural Analysis | | | | | 3 | CE 311 | Design of Reinf. Conc | | | | | 3 | CE 351 | Intro to Engineering Economy | | | | 2 | | | |
| 13 | ENG 112 | English Comp. II | | | 3 | CE 251 & Lab | Const. Materials | | | | | 3 | CE 329 | Envir. Engineering I | | | | | 2 | CE 432 | Senior Design Project II | | | | 2 | | | |
| 14 | MATH 132 | Calculus II | | | 3 | CE 299 & Lab | Hydraulics & Lab | | | | | 4 | CE 318 | Highway Engineering | | | | | 3 | CE Major Elective | | | | | 3 | | | |
| 15 | PHYS 150 & Lab | Physics I & Lab | | | 4 | MATH 232 | Calculus III | | | | | 3 | CE 340 | Design of Foundations | | | | | 3 | GER | | | | | 3 | | | |
| 16 | CHEM 115 & Lab | Gen. Chem. & Lab | | | 4 | ME 202 | Dynamics | | | | | 3 | MATH 308 | Statistics | | | | | 3 | GER | | | | | 3 | | | |
| 17 | | | | | Total | | | | | | | Total | 16 | | | | | | | GER | | | | | 3 | | | |
| 18 | | | | | | | | | | | | | | | | | | | | | | | | | | Total | 17 | |
| 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | Total | 16 |
| 20 | Total Number of Credits to Gradua 131 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Figure 1. Graduation Plan Template.

References

- [1] Woolston, D.C. (2002) “Improving Undergraduate Academic Advising in Engineering: It’s not Rocket Science” *Frontiers in Education Conference, Boston, MA, 2002.*
- [2] “The Challenges of Academic Advising.” (2010) *The Chronicle of Higher Education*, < <https://www.chronicle.com/article/The-Challenges-of-Academic/124225>> (May 13, 2020).
- [3] Varney, J. (2012, September). Proactive (Intrusive) Advising! *Academic Advising Today*, 35(3). <<https://nacada.ksu.edu/Resources/Academic-Advising-Today/View-Articles/Proactive-Intrusive-Advising.aspx>> (June 16, 2020).