CE 559 Strategic Planning in Construction Engineering

Spring 2011 Syllabus —Section 29744R

Lecture: Tuesdays, 6:30-9:10 PM, RTH 115

Instructor: David W. Crain, Ph.D. — 626-991-7773 — davidwcrain@aol.com

Course Description: Recommended preparation: CE 502.

Elements and techniques of strategic planning for construction engineering. Fundamentals of engineering as a service sector enterprise. Assessment of markets (including international issues), competitors, and technology. Aspects of overseas engineering business. Management of technology and the role of R&D. Emphasis on concepts.

Course and Learning Objectives:

With the aid of software analysis tools, this course studies elements and techniques of corporate strategic planning and applies them to the engineering and construction industry. Emphasis is placed on analyzing the engineering and construction industry in its business context: competitors, clients (customers), services (products), financial performance and the like. Finance, human resources, IT, product, and customer strategies are all analyzed, understood and developed. Taught in seminar style, the class begins by learning the basics of corporate strategic planning with the strategic analysis of a leading homebuilder, Lennar Corporation. The course proceeds through a term project strategic assessment of an engineering & construction company of each student's choosing.

Text: Stanley C. Abraham, *Strategic Planning: A Practical Guide for Competitive Success,* with CD-ROM, Thomson South Western, 2005; ISBN: 0-324-23255-1 (out of print, shop the Internet).

References:

- Lennar Corp Annual Report 2010 and 2011 Annual Report (available on line, through the Wall Street Journal or EDGAR, for example)
- Standard & Poor's Industry Survey, Homebuilding, July 1, 2011, or most recent (Available from the Crocker Business Library electronic data bases.)
- IBISWorld Industry Reports: Homebuilding Industry (IBIS# 23321, Nov 2011) and the Global Engineering Services Industry (IBIS# L6722-GL, Sep 2010), Heavy Industrial Facilities in the US (IBIS# 23493, Sep 2010), and Heavy Infrastructure in the US (IBIS # 23449, Sep 2010) (Available from the Crocker Business Library electronic data bases.
- Student subscription to the Wall Street Journal (recommended).

Tool: S.C. Abraham and Tiffani A. Argandona, Strategic Analysis Module™ software, March 2003 (Bundled with the text. Look for used editions that are still in the book.)

The required text is by Prof. Stan Abraham of Cal Poly's Business School and comes bundled with the SAMTM software. This text is strong on the fundamentals and basics of strategic planning. It provides essential definitions of terminology and the analytical frameworks you will need to conduct objective and complete strategic analyses of corporations, businesses and industries. Along these lines, SAM provides an outstanding Excel-based financial analysis package which takes basic financial inputs and automatically generates financial analyses and managerial accounting reports for up to five years running.

It has been your instructor's experience that strategists and market researchers do their best work when grounded in objective data and fact-based decision-making. Engaging in high-sounding platitudes (ala the Dilbert cartoons) without such grounding is a prescription for charlatanism, at best, and corporate strategic failure if such platitudes are taken seriously in the practical business world. Use of SAM and its fact/data-based approach appeals to engineers and provides a solid foundation for analyzing and managing corporations and businesses at the strategic level.

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Course Outline

Class	Topic	Homework Due
Jan 11	Class introduction and administrative matters. Business strategy defined. The Strategic Analysis Module™ computer program as a tool.	
Jan 18	Lennar Corp financial analysis (SAM Steps 1 through 7)	Read the Lennar Annual Report. Plug as many numbers into the SAM Step 6 financial analysis as you can. Bring Step 6 printouts to class. We will do years 2006-2010 and fill in the 2011 financials later in the term (Lennar's annual report is published in early February).
Jan 25	Lennar industry analysis	Bring completed Lennar financials to class. Read Standard & Poors/IBIS World Industry Survey for Homebuilding. Work on SAM tabs entitled "Industry" and "Porter" and bring printouts to class.
Feb 1	Lennar situation analysis with emphasis on competition and environmental analysis	Work on SAM tabs entitled "Competition" and bring printouts to class.
Feb 8	Lennar internal and strategic group map	Work on SAM tabs entitled "External" and "Strategic Group Map" (one map) and bring printouts to class.
Feb 15	Lennar GE Matrix and SPACE diagram	Work on Lennar's SPACE diagram and GE Matrix and bring printouts to class.
Feb 22	Lennar strengths, weaknesses, threats, opportunities (SWOT) analysis followed by TOWS analysis	Assess SWOT for Lennar and bring printout to class. We will do the TOWS matrix in class.
Mar 1	Synthesis of a proposed business strategy for Lennar, walking through the bundles methodology of SAM and demonstrated in class.	
Mar 8	In-class time for review of selected E&C companies and individual projects.	SAM printout pertaining to Lennar—all SAM class deliverables, revised and reprinted per our class discussion . 575-word write-up summarizing Lennar: situation analysis (internal and external issues), description of strategic alternatives (so-called "Bundles"), recommended strategy and rationale, along with alternatives considered and perhaps rejected.
Mar 15	*Spring Break*	
Mar 22	Financial performance in the engineering & construction marketplace. Critical success factors of E&C firms.	
Mar 29	Sales and Marketing in the engineering and construction industry.	
Apr 5	Branding in the E&C business. Considerations of brand values and the role of market and non-market environments.	
Apr 12	Mission and vision as a strategy setting discipline	Research and bring to class a mission and/or vision statement for a firm of your choosing.
Apr 19	USC Construction Management Symposium #17 (Tentative)	We will attend the Symposium this evening. Special arrangement for DEN students will be made.
Apr 26	Course Review. In-class time for review of selected E&C companies and individual projects. Course Evaluations	
May 8		Term project: Strategic assessment and plan for student selected E&C industry firm. You may bring your project to class or mail it to your instructor postmarked this date.

Communication and Feedback

Feedback is a critical part of any learning experience, both for the student and the instructor. You may communicate with your instructor in a number of ways--before and after class, and by appointment—to talk about any aspect of your work, either individually or in groups. Like many of you, your instructor is committed during business hours and is not available on campus. Your instructor is usually on campus Tuesday evenings only, when arrangements for a dinner meeting prior to the 6:30 o'clock hour may be made. You are also welcome to call your instructor during the day, leave a voice mail message, or make an appointment for another time. One sure way to make contact is via e-mail.

Coursework and Grading

Students develop Computer Assisted Strategic Analyses of businesses in general and of engineering and construction firms in particular. Students participate in class discussions of these analyses applied to case studies and real world situations. Resources include the SAM software, the accompanying text book, and access to company annual reports and on-line data sources related to business and the global economy.

Course grades will be determined by students' relative performance on the following course components.

20%	Class Participation
20%	Homework (Lennar progress deliverables from SAM)
20%	Lennar Project
40%	Term Project

<u>Participation</u>

Participation will be comprised of two components: attendance and attention paid to in-class discussions of course material. Class attendance is mandatory. Excused absences will count less heavily against participation than unexcused absences. In order for an absence to be considered excused, the student must notify the instructor in advance of the expected absence.

Success in life, if not in education, depends upon one's level of participation. Opportunities to advance in business are directly correlated to the degree to which you are judged to be participating. Participation in this class will be assessed by the thoughtfulness of questions asked, the quality of comments made and materials from your work or profession brought into class that contribute materially to class discussions and learning. Students may be called on, at random, to take the lead in various aspects of class discussions.

The quality of the contributions made during these periods will weigh heavily on a student's overall participation grade. Factual misstatements, comments that demonstrate a lack of adequate preparation, or comments that come late in a discussion that distract the class and indicate that the student has not been actively paying attention will be noted as "negative" course participation.

Homework

Bring your printouts as indicated in the class outline and turn them in to your instructor. Those not attending class in person can submit their printouts through DEN. The homework will not be graded in detail, but they will be reviewed to make sure you are keeping up with our class and its teachings. Your printouts and accompanying SAM charts may be done in collaboration with one other student in our class.

Lennar Project

This deliverable is described in the class outline. Further details will be provided in class as it develops. This write-up and accompanying SAM charts may be done in collaboration with one other student in our class.

Term Project

The term project will serve as the final exam. Following the methods we learned in class and applied to Lennar Corp, the term project will be a complete strategic analysis with recommended long-term strategies, mission and vision statements for an engineering and construction firm selected by the student and approved by the instructor. Past projects have covered companies like AECOM, Kellogg Brown & Root, CH2M Hill and Standard Pacific Homes as well as major E&C firms based in countries like Korea and Turkey. You may do the term project by yourself or in collaboration with one other student—your choice. Joint collaborations have the advantage of sharing the workload which usually results in a superior product and learning experience. Be aware that the grade earned by joint papers will apply equally to each collaborator.

About Your Instructor

David W. Crain has more than 25 years' experience managing the marketing, strategy, and engineering functions in a corporate setting. He was Director of Markets and Strategies for Fluor Corporation which, at $18 billion in revenues, is the largest engineering and construction firm in the world. While at Fluor, Dr. Crain managed a staff of 6 MBA market researchers performing analysis of the engineering and construction industry: the marketplace, competitors, partners, merger-and-acquisition targets, and related economic, business and geo-political conditions. He advised Fluor on strategy issues such as branding, mission/vision formulation, market research and segmentation, and geographical positioning and marketing strategies.

Prior to joining Fluor Daniel, Dr. Crain managed competitive analysis and strategic planning for Los Angeles-based Pacific Enterprises (now Sempra Energy), a $3 billion energy-services conglomerate. There, he helped shape Pacific Enterprises' international diversification objectives, and established that organization's competitive-intelligence function. Earlier he managed the engineering-design department for Pacific Enterprises' principal subsidiary, the Southern California Gas Company, progressing to manager of a staff of 60 professionals and an annual budget of $50 million.

In earlier professional activities, Dr. Crain was with the United States Naval Research Center in San Diego where he was responsible for development of microelectronics for anti-submarine-warfare systems. It was there, while working on undersea television exploration technology, he conceived and received the first patent on what became the "1st and Ten" concept introduced on ESPN football telecasts in 1998, now widely used in network sports casting and the foundation technology for augmented reality (AR) displays.

For more than 20 years, David Crain was a Lecturer and Adjunct Professor at Cal Poly Pomona and instructed graduate and undergraduate students in electronics and computer sciences. Now on staff at Pepperdine's Graziadio School of Business and Management, Dr. Crain previously as adjunct lecturer of strategy where he taught business strategy to MBA students for nearly 10 years. Dr. Crain is past President of the California Chapter of the Strategic Leadership Forum—an international organization dedicated to fostering the art and discipline of strategic planning in business—and he subsequently co-founded a national organization, the Association for Strategic Planning, for which he served as its first president (1999-05).

David Crain presently consults to large corporations in marketing and business strategy. He received his Ph.D. in Engineering from USC where his dissertation focused on semiconductor materials development for flash memory applications some 25 years before commercialization of the technology. His interests are varied and include video technology and movie-making, collecting motion-picture soundtracks, fitness, hiking, and golf. He has two grown children and resides with his wife Sheila in Hacienda Heights.

Academic Responsibility

Students, faculty, and administrative officials at the University of Southern California, as members of the academic community fulfill a purpose and a responsibility.

The University must, therefore, provide an optimal learning environment, and all members of the University community have a responsibility to provide and maintain an atmosphere of free inquiry and expression. The relationship of the individual to this community involves these principles:

Each member has an obligation to respect:

1. THE FUNDAMENTAL HUMAN RIGHTS OF OTHERS
2. THE RIGHTS OF OTHERS BASED UPON THE NATURE OF THE EDUCATIONAL PROCESS
3. THE RIGHTS OF THE INSTITUTION

ACADEMIC DISHONESTY

The following statements and examples explain specific acts of academic dishonesty:

1. Examination Behavior: Any use of external assistance during an exam is considered academically dishonest unless expressly permitted.
   Communicating in any way with another student during the examination.
   Copying material from another student's exam.
   Using unauthorized notes, calculators or other devices.

2. Fabrication: Any intentional falsification or invention of data or citation in an academic exercise will be considered a violation of academic integrity. Inventing of altering data for a laboratory experiment or field project. Resubmitting returned and corrected academic work under the pretense of grader evaluation error, when, in fact, the work has been altered from its original state.

3. Plagiarism: Plagiarism is the theft and subsequent passing off of another's ideas or words as one's own. If the words or ideas of another are used, acknowledgement of the original source must be made through recognized referencing practice.

4. Direct Quotation: Any use of a direct quotation should be acknowledged by a footnote citation and by either quotation marks or appropriate indentation and spacing.

5. Paraphrase: If another's ideas are borrowed in whole or in part and are merely recast in the student's own words, proper acknowledgement must, nonetheless, be made. A footnote or proper internal citation must follow paraphrased material.

6. Other Types of Academic Dishonesty:
    a. Submitting a paper written by another;
    b. Using a paper or essay in more than one class without the instructor's express permission;
    c. Obtaining an advance exam copy without the knowledge or consent of the instructor;
    d. Changing academic records outside of normal procedures;
    e. Using another person to complete homework assignment or take-home exam without the knowledge and consent of the instructor.

The above information is taken directly from the SCampus and the Academic Affairs Unit of the Student Senate in conjunction with the Academic Standards Committee.

Statement Regarding Disability Services and Programs

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. DSP is located in STU 301 and is open early 8:30 a.m. – 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.