

**AMERICAN UNIVERSITY OF BEIRUT**



**STRATEGIC PLANNING REPORT  
OF THE  
FACULTY OF ENGINEERING AND ARCHITECTURE**

**DRAFT  
JUNE 5, 2012**

# 1. FEA Mission Statement

The Faculty of Engineering and Architecture (FEA) at the American University of Beirut is a leading professional school in the Middle East. The FEA offers educational programs of the highest standards, advances knowledge through research and scholarly creative work of its faculty and students, and provides services to the community at large, while addressing the needs of Lebanon and the region. The FEA undergoes continuous improvement to maintain a challenging and intellectually stimulating environment, and prepares its students to be life-long learners, innovators, and professionals capable of being leaders in their chosen careers, committed to personal integrity, and civic responsibility.

*Approved on May 17, 2011 by the FEA faculty members*

## 2. Major Accomplishments, Challenges, and Setbacks AY 2005-06 to AY 2011-12

### A. Major Accomplishments

#### 1. New and/or improved academic programs

Over the past five years the FEA has done an outstanding job of creating new programs and improving the programs it offers at both the undergraduate and the graduate levels.

In **AY 2005-06** the Department of Electrical and Computer Engineering (ECE) began to phase out its electrical engineering program and accepted student into a new Electrical and Computer Engineering Program. At the graduate level ECE merged its master's degree programs in electrical engineering and computer and communications engineering into one new electrical and computer engineering master's program. The master's degree in the Engineering Management Program was redesigned to include a thesis and a non-thesis option and an UG engineering management minor was offered for the first time. A thorough revision of the required mathematics courses for engineers was undertaken with the Department of Mathematics. The Department of Civil and Environmental Engineering reactivated the Civil Engineering Camp.

In **AY 2006-07** Exchange agreements were signed with: UC Berkeley, UC Davis, University of Wisconsin at Madison, and the Technical University of Munich (for G students and faculty members). The first video conferencing course was offered at AUB by Prof. George Fadel from Clemson University. The Master of Urban Planning degree (MUP) became the Master of Urban Planning and Policy (MUPP). Policy was added in order to clarify to the local and regional professional community that urban planning includes, in addition to design, many facets of policy-making at the levels of cities and regions, such as local governance, economic development, community-based development, housing policy, land use, regulatory policy, etc. In the Department of Electrical and Computer Engineering the Distributed Computing lab and the RF and Wireless Communications lab were established. The Annual FEA Student Conference was

opened to student submissions from outside AUB. Major TEMPUS grants were received. The first faculty retreat, in seven years, was held in February.

In **AY 2007-08** the first PhD students were enrolled in the four new PhD programs: civil engineering, electrical and computer engineering, environmental and water resources engineering, and mechanical engineering. The Information and Communications Technology (ITC) master's also enrolled its first students. The Manufacturing Lab and Sustainable Energy Lab were established. The department of ArD established and met with an international external advisory board. A new award was established for the Distinguished Young Alumnus in the FEA. An exchange agreement was signed with the University of New Mexico (UG and G students and faculty members).

In **AY 2008-09** meetings, begun in AY 2005-06, continued with the Department of Mathematics to improve core-engineering courses. In June of 2009 four self-study reports were completed and submitted to ABET. CEE purchased and installed what is possibly the region's most advanced automobile driving simulator. Inauguration ceremonies were held for two new high-performance computer laboratories: Intel donated the Intel-High Performance Multicore Computer Laboratory, and Fujitsu-Siemens and Oracle donated the Fujitsu-Siemens Information Research Laboratory. The IT Unit coordinated with GD faculty members to create the first Apple Authorized Training Center for Education (AAACTE).

In **AY 2009-10** the new Construction Engineering Program (BS) and the new Chemical Engineering Program (BS and BE) admitted their first students. The Applied Energy Master's Program began accepting students. The applied research area is successfully attracting mature professionals working in the region who desire to work on practical engineering problems. In AY 2010-11, 25 students were registered in the program; seven graduated over the course of the year. ABET accreditation was granted to four UG engineering programs. The first PhD was awarded to a student in ECE. The Areen Architecture Lecture Series was launched and Rem Koolhaas was the first speaker. The Internet Security Lab was established.

#### **AY 2010-11**

FEA Faculty retreats have been held every year since 2007 to deal with strategic planning issues. The minor in applied energy is housed in the Dean's Office. The construction and chemical engineering programs completed the second year with 36 students registered in construction and 63 in chemical engineering.

#### **AY 2011-12**

In the fall of AY 2011-12 there are 19 students registered in the Applied Energy Master's Program; 98 in the Chemical Engineering Program; and 40 in the Construction Engineering Program. Draft proposals for MS/ME degrees in Chemical Engineering and an MS degree in Construction Engineering are moving through the approval and registration processes. A proposal for a PhD program in the History, Theory, and Criticism of Design submitted by the ArD department has been approved at the Faculty level. A proposal for an undergraduate major in industrial engineering (BE degree) is moving through the approval

and registration process. In the fall term, the Master's of Engineering Management (MEM) program graduated its 400<sup>th</sup> student.

## **2. Facility and service improvements**

### **AY 2005-06**

Remodeling of the façade and terrace of Bechtel was completed and a plasma screen was installed in the main lobby. This was the second year of IT Unit in the FEA; the FEA Records Office began the process of automation. The FEA Career Center listed 286 companies, and 1,751 students and alumni registered for services. The ground-breaking ceremony for the SRB was held in Oct. 2005 and the FEA Distinguished Faculty Service Award was created.

### **AY 2006-07**

Automation was started for student and faculty records, petitions, the FEA Career Center, and the Student Conference website.

The SRB was completed in Dec. 2006; Wings B and C were demolished and the labs were relocated mid-year rather than during the summer as planned. LCD projectors and teaching white boards were installed in all labs.

The renovation of mechanical engineering departmental office was completed  
In the Records Office-student petitions were put on line.

The FEA Career Center became the Career Development Center (CDC) with 404 companies and 2,180 students and alumni registered.

Inside the ArD building on the third floor, inside studio 400, new office spaces were created; on the second floor new offices and a smaller seminar room were created.

### **AY 2007-08**

Many Physical Space Committee meetings were held to find space for faculty offices and a much needed conference room. In the architecture building three faculty offices replaced a conference room. The committee did extensive work on IOEC planning because an entire floor was removed from the original design.

IT Unit reported no security or data loss during the year. Card access capability installed in all labs. The CDC listed 539 companies, 29 universities, 2,675 students and alumni (1,826 alumni). In ArD building on the second floor: creation of three new offices for MUDD/MUD; and a student lounge in the basement.

### **AY 2008-09**

The Engineering Lecture Hall was completed. The automated seating system used for exams in Bechtel was completed. The Records Office was located in a new area and five new faculty offices were created in its old location. In Jan. 2009 the first BSC report was completed.

### **AY 2009-10**

The lobby of the SRB was reconfigured to hold eight offices for faculty and staff  
The entrance walk way on west side of Bechtel was completed.

The on-line student petition system was improved to allow attachments to be submitted. In the CDC, 382 third year students were placed in internships; 623 companies, and 3,552 students and alumni were registered. In the ArD Lobby an exhibition system for rotating exhibits of student work was installed and in all the studios there was renovation that included partitions and work stations for all students.

### **AY 2010-11**

The Conference Room in RGB was completed.

### **AY 2011-12**

Nine faculty offices were created in the area that was the back of the FEA Library. The laboratories for the Chemical Engineering Program remain a challenge; two pre-fab containers were placed on Bechtel, west side terrace on the fifth floor. A building with four floors is now being constructed behind the SRB. Construction has begun on the IOEC. A reception area for the Engineering Management Program was created on the fifth floor of the Bechtel Building

## **B. Challenges faced**

A system for collecting, storing, and retrieving information organized in useable categories is a challenge to program assessment and evaluation at all levels and across the university. The sustainability of the program review processes is still under discussion, especially in terms of the financial and human resources required.

Our initial PhD proposal includes a thorough review of the four engineering PhD programs in AY 2011-12, five years after they began. It is therefore premature to suggest a complete analysis but we are clearly facing challenges in some areas:

- We are not attracting our best undergraduate students to our graduate programs. (*Initiating the accelerated PhD program starting in the fall of 2012 is an attempt to address this.*)
- The PhD students need appropriate office space; this has been planned in the IOEC. Funding for renovation of existing areas is required to make them more suitable to nurturing the culture of research we are striving to create in the Faculty.
- International applications to the PhD programs have been received but most candidates were not strong enough to warrant acceptance and support. Finding ways to enlarge the pool of candidates is essential to the sustained healthy growth of the programs. The enrollment in FEA PhD programs in the fall term AY 2010-11 was ME 4, ECE 19, Civil 4, and Environmental Water Resources 8; and in the spring term it was ME 6, ECE 23, Civil 7, and Environmental and Water Resources 8. In AY 2011-12 the fall term PhD enrollment is ME 7, ECE 23, Civil 4, and Water Resources 9; and in the spring term it was ME 6, ECE 23, Civil 5, and Water Resources 8. The total number of PhD students who have graduated from each program as of Sept. 2011 are one in ECE, two in civil engineering, and one in water resources. The departments would like the enrollment to increase to about twenty in each program, except ECE which would like to cap its program at 40 students.

One important initiative addressing the needs of international students is to have a plan in place to support and work with the English language abilities of students graduating from Arabic, French, and perhaps Farsi language based institutions. FEA faculty members have worked with faculty in FAS to create the beginning of such an initiative.

As we move toward more emphasis on graduate education and research the UG enrollment must be regularly assessed. A critical resource for strengthening and continuing to grow the PhD programs is faculty time. In AY 2009-10 we had 260 graduate students enrolled in master's and PhD programs; in AY 2010-11 we had 305; in the fall of AY 2011-12 there are 343 students enrolled in master's and PhD programs in the FEA.

The total enrollment in the undergraduate programs was 1,683 in the fall semester of AY 2008-09; 1,730 in the fall semester of AY 2009-10 and the enrollment increased to 1,750

in the spring of 2010. The UG enrollment for AY 2010-11 was 1,855 in the fall term and 1,834 in the spring term. These statistics have created a challenging situation for the departments. During the next five years, by AY 2015-16, the FEA wants to cap UG enrollment in existing programs at 1,830 and allow the enrollment to grow to 2,000 with the launching of the new undergraduate program.

The IOEC has been a major challenge: in AY 2005-06 the expected completion date was 2008-09; in AY 2006-07 the expected date for completion was estimated as not before 2010; in AY 2009-10 the expected completion is 2013 with construction to begin in the summer of 2010. February 14, 2012 construction is currently under way.

### **3. External Trends and Influences**

#### **Technology**

As a technical school the FEA is heavily impacted by changes in technology. The emergence and rapid expansion of software engineering tools is having an impact on the curriculum. The new technology is pushing us to purchase new equipment, which is straining the budget and physical space.

Service and information for faculty members and students is increasingly web based. Wireless access has changed student space use. All students are required to own a laptop computer. The ability to submit assignments online may mean students see their professors less often outside of classroom hours. Students have access to immediate support for course work (legally, and illegally any assignment can be purchased). Students entering the programs have increased skills, knowledge, and comfort in the use of technology.

#### **Legal, regulatory**

The current law in Lebanon requires engineers to complete a five year undergraduate program to be eligible to practice. The new BS degrees in engineering will not meet the requirements to practice engineering in Lebanon. A student with a BS must earn a master's degree to be accepted by the Syndicate of Engineers and Architects to practice in Lebanon.

All FEA programs are registered in the US and any modifications to the requirements for registration must be addressed by the FEA. ABET accreditation is now required for the registration of engineering programs in NYS. This concerns the chemical engineering and construction engineering programs and until the completion of the IOEC this is a problem particularly for chemical engineering.

The Ministry of Higher Education, as discussed at the Union of Lebanese Universities, is in the process of creating new regulations governing PhD programs and master's degrees. So far the number of credits required, as well as the composition of the thesis committee has been affected.

#### **Demographics**

The pool of qualified students applying to FEA has increased. The number of female students has continued to increase. The ratio of male to female students in chemical engineering is almost 1:1. FEA students are primarily from Beirut and the Mount Lebanon regions.

Professors in the FEA are primarily from Lebanon. The majority have received their highest degree from universities in the US. In order of greatest to least, according to the *FEA Annual Report 2009-10* full time faculty members earned their degrees in the: US, Great Britain, Canada, France, Germany, Netherlands, and Austria. The full time faculty members are overwhelmingly male (except in ArD).

**Competition**

There are well established engineering and architecture programs in Lebanon with good reputations but AUB maintains the edge though a critical approach grounded in liberal education. However, there is growing competition in the region.

The competition for students at the master's and PhD levels is from Europe and the US. AUB needs to do a much better job of advertising the master's and PhD programs; AUB is not "known" for its graduate programs. If the PhD programs are going to be successful the best students from the region need to be attracted.

There is competition for faculty and administrators from extensions of US universities that have been established in the region. REP has facilitated the short and long term drain of some faculty members.

**Economics**

The new loan opportunities created by AUB for students may help to increase the economic diversity of the FEA. However, the increase in tuition might negatively affect enrollment. The cost of living in Beirut has increased; the cost of parking near campus has increased, and the time required to commute to and from campus has increased.

**Regional Salary Patterns**

Higher salaries offered outside of AUB may make it more difficult to retain existing qualified faculty and staff and to attract new members.

## 4. SWOT Analysis

<p><b>STRENGTHS</b></p> <p><i>Personnel</i></p> <ul style="list-style-type: none"> <li>▪ Highly qualified faculty who bring with them international experiences both professionally and academically and who represent diverse areas of expertise and research interests</li> <li>▪ Alumni who are well established professionally and supportive of the Faculty</li> </ul> <p><i>Students</i></p> <ul style="list-style-type: none"> <li>▪ Outstanding undergraduate students, who are active in university groups, professional societies and concerned with the politics of the region.</li> </ul> <p><i>Academics and Programs</i></p> <ul style="list-style-type: none"> <li>▪ Undergraduate curriculum which requires a broad exposure to the liberal arts</li> <li>▪ Annual internal and external review processes that assure continuous improvement and responsiveness to evolving constituent needs</li> </ul> <p><i>Environment, Facilities, and Support</i></p> <ul style="list-style-type: none"> <li>▪ Productive and friendly relationship between faculty and students</li> <li>▪ Accessible and adequately equipped teaching and research laboratories that are maintained by a qualified technical staff</li> <li>▪ Interaction with local and international scholars</li> </ul>	<p><b>WEAKNESSES</b></p> <p><i>Personnel</i></p> <ul style="list-style-type: none"> <li>▪ No clear route for professional advancement of staff</li> <li>▪ A large number of part time faculty</li> </ul> <p><i>Students</i></p> <ul style="list-style-type: none"> <li>▪ Increasing geographic homogeneity of students</li> <li>▪ High student faculty ratio</li> </ul> <p><i>Academics and Programs</i></p> <ul style="list-style-type: none"> <li>▪ Limited collaboration across AUB</li> <li>▪ Lack of non-thesis option in some graduate programs</li> </ul> <p><i>Environment, Facilities, and Support</i></p> <ul style="list-style-type: none"> <li>▪ Insufficient support for administrative work</li> <li>▪ Limited venues for attracting grants</li> <li>▪ Problems during registration for students</li> </ul>
<p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>▪ Establishing new UG programs and expanding existing ones to accommodate market demands</li> <li>▪ Establishment of multi-disciplinary graduate programs and research within FEA and across the University (Biomedical and Materials)</li> <li>▪ Establishment of student work-study (long-term internship) programs</li> <li>▪ Establishment of executive programs targeting mid-career professionals</li> <li>▪ Establishment of new centers of excellence</li> <li>▪ Set-up of an adequate process for professional consulting and community service</li> <li>▪ Readiness of local industry for University collaboration and knowledge based investment</li> <li>▪ Strengthen ties with industry</li> <li>▪ Establish an UG research culture</li> </ul>	<p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>▪ Lack of tenure</li> <li>▪ High tuition fees and limited scholarships, which affect social diversity of the student body</li> <li>▪ Competition with universities/programs in the region (many are US affiliated)</li> <li>▪ Unstable political situation in Lebanon and the region</li> </ul>

## **5. Vision Statement**

The Faculty of Engineering and Architecture aspires to lead in the advancement of knowledge in design and engineering with impact on practice and policy.

*Approved at SPC meeting held on June 10, 2011.*

## **6. Strategic Goals and Objectives**

### **1. To be recognized for theoretical and applied research and design**

By defining and promoting our research edge, we will become internationally recognized for theoretical and applied research and design, thereby enabling us to attract and support more graduate students from diverse backgrounds. (See related AUB goals #2 and #4). The related FEA objective is: excellent faculty competencies and skills (H.1)

*From Final Report of Ad-hoc Research Foci Committee:*

- *Energy Resources and Management*
- *Environmental Sciences and Technologies*
- *Material Science and Engineering*
- *Information and Communication Technology*
- *Regional Architecture and Urbanism*

Towards this end, new faculty hires will be selected to strengthen these areas and our limited new resources will be directed to establish the infrastructure needed for quality research to be feasible.

### **2. To create greater integration and collaboration between academic programs within and outside the FEA**

By creating greater integration and collaboration between academic programs within and outside the FEA, we will be able to enhance the quality of undergraduate and graduate education (See related AUB goal #8). The related FEA objectives are: excellent learning experiences (S.1), excellent personal and social growth (S.2), US accreditation compliance (I.2), and internal and external collaborative activities (H.4)

### **3. To support the personal and social growth of our students**

By supporting the personal and social growth of our students, we will enhance their professional prospects and their ability to be leaders who provide service to their communities (See related AUB goal #1). The related FEA objectives are: excellent career prospects and leadership (S.3) and professional societies and extracurricular activities (I.5)

#### **4. To improve the facilities and technical support for teaching and research**

By continuously improving the facilities and technical support for teaching and research, we will increase our ability to retain exceptional faculty and staff (See related AUB goals #3 and #6). The related FEA objectives are: up-to-date education design and delivery (I.1) and modern facilities for education & research (I.3)

#### **5. To provide professional service to the community and support educational activities**

By partnering with external agencies, industries, institutions, and professionals; we will jointly provide professional service to the community and support educational activities for our students (FYPs, internships, contests, and research and design projects). (See related AUB goal #5). The related FEA objective is: contribute to university's fiscal balance (F.2).

#### **6. To enhance decision making processes for improvement**

By creating continuous improvement activities through clear and apparent shared assessment, evaluation, and decision making processes; we will ensure that all faculty, staff, and students have a voice in the changes that will inevitably be required and occur. (See related AUB goal #7). The related FEA objectives are: prepared and motivated work force (H.2), climate for continuous improvement (H.3), adequate support processes (I.4), and increased productivity of support services (F.1).

#### **7. To enhance the importance of design in the FEA (and at AUB)**

By enhancing the importance of design, the connections with the ArD department will be better understood and integrated.

## **7. Strategic Initiatives**

### **FEA Strategic Initiatives**

#### **FEA level initiatives**

- Fundraising for the PhD programs (Related to FEA strategic goals #1 and #2)
- Improve the working conditions of the faculty and staff in the FEA, (Related to FEA strategic goals #4 and #6)
- Develop a system for the promotion and development of staff members (Related to FEA strategic goal #6)
- Advertise graduate programs to attract national and international students (PhD and master's) (Related to FEA strategic goals #2 and #6)
- Expand the work of the Career Development Center (Related to FEA strategic goal #5)
- Insure sustainability of accreditation compliance and continuous improvement (Related to FEA strategic goal #2)
- Create an advanced placement option for students from the BE to ME degree (Related to FEA strategic goal #2)

- Create the accelerated PhD option for all engineering programs

### **Department initiatives**

#### Architecture and Design

- Increase full time faculty lines by 3 over the next 3 years to strengthen the UG programs in architecture and GD.
- Restructure existing programs and prepare for accreditation
- Create greater integration and collaboration between academic programs within and outside the department
- Improve and expand facilities 2013-2016
- Introduce new graduate programs: Graduate Program in History, Theory, and Criticism of Design
- Establish a research edge(s): Center for the Advanced Study of the Built Environment (CASBE )

#### Civil and Environmental Engineering

- Introduce an MS degree in construction engineering
- ABET accreditation for the BS program in construction engineering
- Increase the quantity and quality of PhD students in the department
- Consolidate the Environmental Lab and the Core Environmental Lab of the Medical School
- Create an endowment for the Water Resources Center (it is currently supported by grants)

#### Electrical and Computer Engineering

- Strengthen the departmental research and teaching in the areas of computer hardware and signal processing
- Develop the technical part in the power and machine area and provide proper IT support
- Provide a supportive and enriching environment for the development of faculty members, staff, and students
- Increase the visibility of the department, (programs and research)

#### Mechanical Engineering

- Review the design and innovation experiences in the curriculum to improve the experiences we offer to students
- Integrate and streamline courses across the three levels (BE/ME/PhD) and within the three degrees
- Re-envision the Shops to be a place of learning
- Provide a richer extracurricular environment for students (workshops, clubs, Alumni Seminar Series, etc.)

#### Strategic Initiatives in Chemical Engineering Area

- ABET accreditation
- Become a Department of Chemical (and Petroleum?) Engineering
- Introduce MS and ME degrees in chemical engineering

### Engineering Management Program

- Become the Department of Industrial Engineering and Management
- Introduce a BE degree program in Industrial Engineering

## List of Initiative Templates

FEA1101 History of Architecture in the Islamic World position/ AlMualim Mohamed Awad Binladin Chair / Endowed Chair

FEA1124 ABET and NAAB accreditation of undergraduate engineering and architecture programs

FEA1125 Increased recruitment and visibility of undergraduate and graduate programs in the FEA

FEA1126 Expand the work of the Career Development Center

FEA1127 Students with BE degrees given advanced standing in ME degree programs

FEA1128 Fundraising for PhD

FEA1129 Working conditions of staff members

FEA1130 New faculty members in a core research area

FEA1131 A fast track PhD program

FEA1132 PhD in Biomedical Engineering

FEA1103 ArD Strengthen the undergraduate programs in architecture and graphic design and prepare for accreditation

FEA1104 ArD Center for the Advanced Study of the Built Environment (CASBE)

FEA1105 ArD Graduate Program in History, Theory, and Criticism

FEA1106 CEE MS Program in Construction Engineering, Department of Civil and Environmental Engineering

FEA1133 CEE Consolidation of Environmental and Water Resources Centers

FEA1110 ECE ECE faculty recruitment

FEA1111 ECE Continuous Improvement Initiative

FEA1134 ECE Strengthen the ECE department research and teaching in the areas of computer hardware and signal processing

FEA1135 ECE Development of the technical part in the power and machine area and provide lab support

FEA1136 ECE Provide a supportive and enriching environment for the development of faculty members, staff, and students

FEA1114 ME Establish MS and ME degrees in Chemical Engineering

FEA1137 ME Establish a Department of Chemical (and Petroleum?) Engineering

FEA1116 ME Re-envision FEA Shops as a learning center

FEA1117 ME Improve the teaching of design and development through the mechanical engineering curriculum

FEA1138 ME Remodeling of the Mechanical Engineering GA room

FEA1139 ME Faculty lines in Mechanical Engineering

FEA1140 EM Establish an UG BE Program in Industrial Engineering

FEA1141 EM Establish a Department of Industrial and Engineering Management

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			Incremental to AY '10-'11				
			AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1101</b>	<b>History of Architecture in the Islamic World position / AIMualim Mohamed Awad Binladin Chair / Endowed Chair</b>						
01	Advertise the position endowed Binladin Chair position (1)	C					
02	Recruitment costs	OE	\$10,000	\$0	\$0	\$0	\$0
03a	AIMualim M.A.B. Chair	F	0.0	1.0	1.0	1.0	1.0
03b	Salary	OE	\$0	\$90,000	\$90,000	\$90,000	\$90,000
04	Income from endowment (\$2M)	OI	\$10,000	\$90,000	\$90,000	\$90,000	\$90,000

**SPU Comments:**

**The AIMualim M.A.B chair is an endowed position that currently has \$117,000. The faculty member who holds the position will be 50 percent on the faculty of ArD department and 50 percent the director of the Center for the Advanced Study of the Built Environment**

**FEA1103ArD Strengthen the undergraduate programs in architecture and graphic design and prepare for accreditation**

01	Replace a full-time faculty member in Graphic Design (1)	C					
02	Recruitment costs	OE	\$20,000	\$10,000	\$10,000	\$10,000	\$0
03	Replacement salary	OE	\$0	\$0	\$0	\$0	\$0
04	Replace a full-time faculty member in Architecture (1)	C					
05	Replacement salary	C					
06	Hire 1 new faculty member in history and theory of modern and contemporary design (1)	F	0.0	0.0	1.0	1.0	1.0

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			Incremental to AY '10-'11				
			AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1103ArD</b>	<b>Strengthen the undergraduate programs in architecture and graphic design and prepare for accreditation</b>						
07	New salary	OE	\$0	\$0	\$60,000	\$60,000	\$60,000
08	Hire 1 new faculty member in architecture design and building technology (1)	F	0.0	0.0	0.0	1.0	1.0
09	New salary	OE	\$0	\$0	\$0	\$60,000	\$60,000
10	Hire 1 new faculty member in graphic design and design theory or digital media	F	0.0	0.0	0.0	0.0	1.0
11	New salary	OE	\$0	\$0	\$0	\$0	\$60,000

**SPU Comments:**

<b>FEA1104ArD</b>	<b>Center for the Advanced Study of the Built Environment (CASBE)</b>						
01	Hire an administrative assistant for the center	S	0.0	1.0	1.0	1.0	1.0
02	Salary for administrative assistant for the center	OE	\$0	\$15,000	\$15,000	\$15,000	\$15,000
03	Appoint/host research fellows at the center	OE	\$0	\$0	\$15,000	\$15,000	\$15,000
04	Purchase equipment for the offices of director (AIMualim chair) and administrative assistant	CE	\$0	\$20,000	\$0	\$0	\$0
05	Events and Publications	OE	\$0	\$35,000	\$35,000	\$35,000	\$35,000

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			Incremental to	AY '10-'11		
	AY '11-'12	AY '12-'13		AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1104ArD</b>	<b>Center for the Advanced Study of the Built Environment (CASBE)</b>					

**SPU Comments:**

The ArD department is proposing a new, multi-disciplinary graduate research center, the Center for Advanced Studies of the Built Environment (CASBE). The department has in place the academic environment and the structure, expertise, and student body to be the appropriate location for furthering critical discourse on the built environment of the region through the development of advanced studies.

CASBE is a platform for research and teaching, designed to provide a foundation for the initiation of wide-reaching critical discourse on historical and contemporary issues in architectural design that are of regional concern. Architecture is understood here as the all-encompassing built environment that people make and think, whether formally or informally, physically or visually.

CASBE is structured to function through three interconnected academic components:

- A) A graduate program offering an advanced degree at the level of PhD in the History, Theory and Criticism of Design (HTC) with a concentration in architecture, it will require three dedicated full-time faculty members.
- B) Lines for visiting teaching faculty and rotating research fellows, who will contribute to the Center through course offerings and intellectual exchange.
- C) A program of conferences, workshops, seminars and publications intended to focus thematic debate on the relationship between architectural practice and scholarship in the region.

**FEA1105ArD**      **Graduate Program in History, Theory, and Criticism**

01	Hire new faculty member in contemporary regional architecture (1)	F	0.0	0.0	1.0	1.0	1.0
02	Salary	OE	\$0	\$0	\$60,000	\$60,000	\$60,000
03	Recruitment costs	OE	\$0	\$10,000	\$10,000	\$0	\$0
04	Hire new faculty member in urban design theory (1)	F	0.0	0.0	0.0	1.0	1.0
05	Salary	OE	\$0	\$0	\$0	\$60,000	\$60,000

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			Incremental to AY '10-'11				
			AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1105ArD</b>	<b>Graduate Program in History, Theory, and Criticism</b>						
06	Graduate assistantships for students in the program	C					
07	Graduate assistant stipends	OE	\$0	\$0	\$100,000	\$100,000	\$100,000
10	Archiving and Libraries	OE	\$0	\$0	\$10,000	\$10,000	\$10,000

**SPU Comments:**

**This is a new interdisciplinary graduate program for the advanced academic study of design, leading to the terminal degree of Doctor of Philosophy in the History, Theory and Criticism of Design. It is a course in theoretical and historical perspectives focused on regional cultural production; the program will graduate students who will pursue careers in different scholarly venues, advanced teaching, research and design, as well as in professional areas.**

**The proposed new program will be the first of its kind in the region. It will offer students an accelerated degree at the level of PhD in the field of History, Theory and Criticism of Design, with an optional Master of Arts degree awarded after two years of study.**

**FEA1106CEE MS Program in Construction Engineering, Department of Civil and Environmental Engineering**

01	Program approval	C					
02	Registration of degree NY	C					
03	Recruitment	OE	\$10,000	\$10,000	\$0	\$0	\$0
04	Faculty FTE (2)	F	0.0	1.0	2.0	2.0	2.0
05	Salaries for two new faculty members	OE	\$0	\$600,000	\$120,000	\$120,000	\$120,000
06	Start the program	C					
07a	15 students	G	0.0	7.5	15.0	15.0	15.0

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			Incremental to AY '10-'11				
			AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1106CEE</b>	<b>MS Program in Construction Engineering, Department of Civil and Environmental Engineering</b>						
07b	Tuition (15 students)	OI	\$0	\$120,000	\$240,000	\$240,000	\$240,000
08	Graduate assistants (4)	C		2	4	4	4
09	GA stipend	OE	\$0	\$40,000	\$80,000	\$80,000	\$80,000
10	Lab Engineer (1)	S	0.0	1.0	1.0	1.0	1.0
11	Lab Engineer salary	OE	\$0	\$50,000	\$50,000	\$50,000	\$50,000
12	Supplies, computer and software (Year 3>>5?)	CE	\$0	\$25,000	\$25,000	\$25,000	\$25,000

**SPU Comments:**

**Due to start in the fall of AY 2012-13, enrollment is planned around 15 students per year (30 students predicted in the two-year program). Based on comments made by the ABET evaluators of the BE in civil engineering program the additional lab, engineer and administrative assistant will be needed for the Construction Engineering Program.**

**FEA1110ECE ECE faculty recruitment**

01	Replacement position in control area (1)	F	0.0	1.0	1.0	1.0	1.0
02	Salary for faculty member in control area	OE	\$0	\$60,000	\$60,000	\$60,000	\$60,000
03	New faculty position in RF and EM (1)	F	0.0	1.0	1.0	1.0	1.0
04	Salary for faculty member in RF and EM	OE	\$0	\$60,000	\$60,000	\$60,000	\$60,000
05	Advertisement and recruitment	OE	\$20,000	\$0	\$0	\$0	\$0

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			AY '11-'12	AY '12-'13	Incremental to AY '13-'14	AY '10-'11 AY '14-'15	AY '15-'16
<b>FEA1110ECE</b>	<b>ECE faculty recruitment</b>						
06	1 new office with furniture and equipment	CE	\$0	\$15,000	\$0	\$0	\$0

**SPU Comments:**

See justification forms for both the replacement position and the new position. The position in control will be a joint appointment in ECE and ME.

**FEA1111ECE Continuous Improvement Initiative**

01	Appoint assistant chairperson	F	0.5	0.5	0.5	0.5	0.5
02	Administrative salary for assist. Chairperson	OE	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
03	New position for an administrative assistant (1)	S	1.0	1.0	1.0	1.0	1.0
04	Salary for an admin. Assistant	OE	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000

**SPU Comments:**

The aim of the initiative is to sustain program assessment and evaluation processes, and implement continuous improvement plans, so as to:

- Maintain continuous improvement
- Improve the assessment process (sustainability)
- Improve documentation

Address the concerns in the ABET final statement

Assistant chairperson to be in charge of overseeing the ABET related activities. Details of the departmental strategic plan are available in the planning report.

**FEA1114ME Establish MS/ME degrees in chemical engineering**

01	Proposal submitted to University Graduate Council	C					
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**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			Incremental to AY '10-'11				
			AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1114ME</b>	<b>Establish MS/ME degrees in chemical engineering</b>						
02	Senate voting	C					
03	BOT	C					
04	Program approved	C					
05	Program starts	C					
06	Student enrollment	G	0.0	0.0	10.0	15.0	20.0
07	Tuition income	OI	\$0	\$0	\$150,000	\$225,000	\$300,000
08	Graduate Assistantships	C			6	6	6
09	Graduate Assistantship cost	OE	\$0	\$0	\$120,000	\$120,000	\$120,000
10	2 faculty members	F	0.0	0.0	0.0	1.0	2.0
11	Faculty salary	OE	\$0	\$0	\$0	\$60,000	\$120,000
12	Advertising and recruiting	OE	\$0	\$0	\$10,000	\$10,000	\$0

**SPU Comments:**

The Chemical Engineering Program is expected to offer the MS and ME degrees in chemical engineering starting in AY 2012-13 (MS) and 2013-14 (ME). The number of students is expected to reach about 40 by 2015.

The program will need two additional faculty members in order to offer the graduate courses required in the two graduate

**FEA1116ME**      Re-envision FEA Shops as a place of learning

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			Incremental to AY '10-'11				
			AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1116ME</b>	<b>Re-envison FEA Shops as a place of learning</b>						
01	Staff training for to prepare student workshops and certification process	OE	\$0	\$12,000	\$0	\$0	\$0
02	Re-arranging area to limit access	CE	\$0	\$6,000	\$0	\$0	\$0
03	Hire manager of the Engineering shops	S	0.0	0.0	1.0	1.0	1.0
04	Salary - manager of the Engineering shops	OE	\$0	\$0	\$30,000	\$30,000	\$30,000
05	Implement service cost for research work completed in shops	OI	\$0	\$10,000	\$20,000	\$30,000	\$40,000

**SPU Comments:**

The shops, as they are operated currently, are missing a major opportunity to act as a learning center at the interface between design and development. Currently the shop operates as a service to the FEA providing space and service to students and faculty. In this respect, the staff operate mainly as aides to students and faculty in many cases operating on their behalf. This state of operation has led, with the increased number of students, to staff not having time to properly manage the shops. The aim of the initiative is to use the Shops as a learning center where staff oversee operations and provide specific training services that would allow students to work on the implementation of their designs. This can be re-organizing the shops into areas:

- (a) student area where students have open access, after a certification of orientation (metal bending,...)
- (b) lathe areas with access restricted to students who have a lathe and machining certification
- (c) wood area for students with a certificate for wood cutting, and
- (d) welding and CNC cutting area reserved for operations of staff and students with a certificate.

All areas will still be available for course reservation. Shop services will be provided only when vetted engineering drawings are available, ensuring that students are presenting proper detailed design drawings when they require shop service, for this a lab manager will be need to vet all drawing and provide feedback to students. His/her role will be also extend to managing the Shops, organizing workshops, and ensuring the proper training of the staff.

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			Incremental to AY '10-'11				
			AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1117ME</b>	<b>Providing a richer environment for student learning</b>						
01	Review UG mechanical engineering curriculum over 4 years to integrate and streamline course offerings in design and development	C					
02	Provide design opportunities for each study year through competitions	C					
03	Alumni speaker series	OE	\$10,000	\$5,000	\$5,000	\$5,000	\$5,000
04	Solicit funding to sponsor Alumni Speaker Series	EF	\$10,000	\$5,000	\$5,000	\$5,000	\$5,000
05	The Workshop Series	OE	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000
06	Smart Car competition for UG 1st year	OE	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
07	Design competition for UG 3rd year	OE	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
08	Eco-Marathon Competition for UG 2nd-3rd year	OE	\$15,000	\$5,000	\$5,000	\$5,000	\$5,000
09	Eco-Marathon Sponsorship	EF	\$15,000	\$20,000	\$25,000	\$30,000	\$30,000

**SPU Comments:**

The aim is to provide a rich learning environment for students through extracurricular activities that includes an Alumni Speaker Series and a Workshop Series that focuses on skill building. The development of a yearly design competition will substantially improve the dynamics of design and construction teaching. Students will be able to apply the various methodologies learned in class and experience firsthand the difficulties of translating a design into a product. In addition to providing more opportunities for team work and time management, the competitions vary in scope and should not lead to additional strain on students.

**FEA1124** ABET and NAAB accreditation of undergraduate engineering and architecture programs.

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			AY '11-'12	AY '12-'13	Incremental to AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1124</b>	<b>ABET and NAAB accreditation of undergraduate engineering and architecture programs.</b>				Incremental to AY '10-'11		
01	Preparation of 7 self-study reports (SSR)	OE	\$50,000	\$60,000	\$60,000	\$60,000	\$60,000
02	Visit of ABET team to campus**	OE	\$0	\$0	\$0	\$0	\$140,000
03	Visit of NAAB team to campus**	OE	\$0	\$0	\$0	\$0	\$40,000
04	Workshops and training	OE	\$6,000	\$6,000	\$6,000	\$6,000	\$0

**SPU Comments:**

**\*\*This visit will include a team leader and one reviewer for each of the seven programs to be reviewed.**

<b>FEA1125</b>	<b>Increase recruitment and visibility of undergraduate and graduate programs and research in the Faculty</b>						
01	Produce appropriate brochures	OE	\$0	\$15,000	\$15,000	\$15,000	\$15,000
02	Visits to universities in the region	OE	\$0	\$15,000	\$15,000	\$15,000	\$15,000
03	A video on FEA	OE	\$0	\$0	\$40,000	\$0	\$0
04	Administrative Assistant	S	0.0	1.0	1.0	1.0	1.0
05	Salary - Administrative Assistant	OE	\$0	\$15,000	\$15,000	\$15,000	\$15,000

**SPU Comments:**

**The FEA will do active recruitment of top undergraduate and graduate students from Lebanon and the region.**

<b>FEA1126</b>	<b>Expand the work of the FEA Career Development Center</b>						
01	Hire for a new staff position	S	0.0	1.0	1.0	1.0	1.0

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			Incremental to AY '10-'11				
			AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1126</b>	<b>Expand the work of the FEA Career Development Center</b>						
02	Staff salary	OE	\$0	\$15,000	\$15,000	\$15,000	\$15,000
03	Obtain sponsored projects from industry	C			5	10	20
04	\$5,000 per project	EF	\$0	\$0	\$25,000	\$50,000	\$100,000
05	Travel for staff member	OE	\$0	\$0	\$20,000	\$20,000	\$20,000

**SPU Comments:**

**Increase the involvement of faculty members to solicit project and research ideas; work more closely with LIRA.**

<b>FEA1127</b>	<b>Students with BE degrees given advanced standing in the non-thesis ME degree programs in the FEA</b>						
01	Mechanical Engineering master's program (ME) will create a non-thesis option*	C					
02	Advertise option to students who have completed a BE	C					
03	Student enrollment (estimate 10/program)	G	0.0	0.0	35.0	35.0	35.0
04	Student tuition income**	OI	\$0	\$0	\$560,000	\$560,000	\$560,000

**SPU Comments:**

**\*Other ME programs in the FEA currently offer non-thesis options in the master's degree programs.**

**\*\*Students who chose to complete the non-thesis master's degree in one year will pay full tuition.**

**\*\*\*Based on graduate 20 credits per student at \$800 per credit.**

**FEA1128 Fund raising for the PhD programs**

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			Incremental to AY '10-'11				
			AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1128</b>	<b>Fund raising for the PhD programs</b>						
01	Travel expenses for Dean and faculty members	OE	\$0	\$20,000	\$20,000	\$20,000	\$20,000
02	Endowed Fellowships	EF	\$0	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000
03	Increase in total number of PhD students	G	0.0	0.0	3.0	6.0	9.0
04	Income from endowment	OI	\$0	\$0	\$135,000	\$270,000	\$405,000

**SPU Comments:**

**The goal is to create a number of endowed PhD fellowships that will supplement support from the university and permit performance of fundamental and meaningful research.**

**FEA1129 Working conditions for the technical staff members of the FEA**

01	Prepare a career path for technical staff members	C					
02	Regular training programs	OE	\$0	\$10,000	\$10,000	\$10,000	\$10,000
03	Salary competitive with the market	OE	\$0	\$25,000	\$50,000	\$75,000	\$75,000

**SPU Comments:**

**The current system for the technical experts hired to work in our labs is not appropriate to their needs or the needs of the FEA. The grades and steps currently used by HR do not permit career advancement within the Faculty.**

**FEA1130 New faculty members in a core research area**

01	4 new faculty members	F	0.0	0.0	1.0	4.0	4.0
02	Faculty salaries	OE	\$0	\$0	\$90,000	\$270,000	\$270,000

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			AY '11-'12	AY '12-'13	Incremental to AY '10-'11 AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1130</b>	<b>New faculty members in a core research area</b>						
03	Advertisement and recruiting costs	OE	\$0	\$10,000	\$30,000	\$0	\$0
04	Renovation of new offices	CE	\$0	\$10,000	\$30,000	\$0	\$0
<b>SPU Comments:</b>							
<b>3rd year: hire a senior member who will participate in the recruiting and hiring of faculty members.</b>							
<b>FEA1131</b>	<b>Fast track PhD option in the FEA</b>						
01	Additional year of GA supplement/student	OE	\$0	\$22,000	\$44,000	\$66,000	\$88,000
02	Total number of students admitted	G	0.0	12.0	24.0	36.0	48.0
<b>SPU Comments:</b>							
<b>This option is being developed to help recruit some of our best UG students; they are currently applying to universities abroad for graduate work</b>							
<b>FEA1132</b>	<b>PhD in Biomedical Engineering</b>						
01	4 new faculty members	F	0.0	0.0	1.0	2.0	4.0
02	Faculty salary	OE	\$0	\$0	\$60,000	\$120,000	\$240,000
03	Advertisement and recruiting costs	OE	\$0	\$10,000	\$10,000	\$20,000	\$0
04	Renovation for new offices	CE	\$0	\$0	\$10,000	\$10,000	\$10,000
05	Development of proposal	C					

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			AY '11-'12	AY '12-'13	Incremental to AY '10-'11 AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1132</b>	<b>PhD in Biomedical Engineering</b>						
06	Approval and registration of proposal	C					
07	Number and cost of Phd students	C					
08	Administrative Assistant	S	0.0	0.0	1.0	1.0	1.0
09	Salary of an administrative assistant	OE	\$0	\$0	\$15,000	\$15,000	\$15,000

**SPU Comments:**

**A new initiative with the medical school. To occupy one floor in SRB. A committee composed of faculty members from FEA and the FM has been formed and has started to meet.**

**FEA1133CEE Consolidation of Environmental and Water Resources Centers**

01	\$5million endowment for the center	EF	\$0	\$0	\$2,000,000	\$1,500,000	\$1,500,000
02	Set up an advisory committee for the center	C					
03	Hire a director for the center (half faculty and half assigned to the center)	F	0.0	0.0	0.0	0.5	0.5
04	Director salary	OE	\$0	\$0	\$0	\$50,000	\$50,000
05	Hire Research Associates	F	0.0	0.0	0.0	1.0	1.0
06	RA salaries	OE	\$0	\$0	\$0	\$40,000	\$40,000
07	Income from endowment	OI	\$0	\$0	\$0	\$90,000	\$90,000

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

		AY '11-'12	AY '12-'13	Incremental to AY '13-'14	AY '10-'11 AY '14-'15	AY '15-'16
<b>FEA1133CEE</b>	<b>Consolidation of Environmental and Water Resources Centers</b>					
<b>SPU Comments:</b>						
The FEA Environmental Engineering Research Center (EERC) and the Water Resources Center (WRC) will be consolidated under one entity that will be supported by the consolidated environmental laboratories to become the Environmental and Water Resources Center (EWRC) under FEA for which an endowment of 5million USD will be sought to cover administrative and research budget. The consolidated EWRC will support interdisciplinary research and divisions across the university and will work as a regional center of excellence that will catalyze related existing graduate programs (ME, PhD in EWRE and MS in Environmental Studies).						
<b>FEA1134ECE</b>	<b>Strengthen the ECE department research and teaching in the areas of computer hardware and signal processing.</b>					
01	Hire a faculty member in the area of computer hardware	OE	\$0	\$0	\$0	\$60,000
02	Hire a faculty member in the area of signal processing	OE	\$0	\$0	\$0	\$60,000
03	2 new faculty positions	F	0.0	0.0	0.0	1.0
04	Improvements to the hardware lab	CE	\$0	\$0	\$0	\$40,000
05	Advertising and recruiting	OE	\$0	\$0	\$10,000	\$10,000

**SPU Comments:**  
The department needs to cover the teaching load in both areas and to update the corresponding labs.

<b>FEA1135ECE</b>	<b>Development of the technical part in the power and machine area and provide lab support</b>					
01	Salary for a lab technician	OE	\$0	\$30,000	\$30,000	\$30,000
02	Salary for a lab engineer in the area of power and machine	OE	\$0	\$0	\$45,000	\$45,000

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			AY '11-'12	AY '12-'13	Incremental to AY '13-'14	AY '10-'11 AY '14-'15	AY '15-'16
<b>FEA1135ECE</b>	<b>Development of the technical part in the power and machine area and provide lab support</b>						
03	2 new staff members	S	0.0	1.0	2.0	2.0	2.0
04	Donation expected	EF	\$0	\$120,000	\$120,000	\$0	\$0

**SPU Comments:**

The departments will be receiving a sizable equipment donation from Schneider Electric over the new two years; a lab engineer to write the experiments and run the lab will be required.

**FEA1136ECE Proved a supportive and enriching environment for the development of faculty members, staff, and students.**

01	Increase the ECE development fund	OE	\$130,000	\$100,000	\$120,000	\$140,000	\$140,000
02	Offering short courses	OI	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000

**SPU Comments:**

The department has been working closely with companies and alumni to secure funding to support UG, master's, and PhD students, staff, and faculty members for FYPs, the presentation of research at international meetings, and to send lab engineers for training workshops related to their duties. All fund raising is done through the Dean's office and is approved by the Dean. Funds from this initiative are being used to develop ECE short-courses: training opportunities for individuals, regional companies, and government members delivered by faculty members in the ECE department. These courses will be designed for managers and staff at all levels in order to offer continued support to engineers for career growth and skilled development.

**FEA1137ME Establish a Department of Chemical (and Petroleum?) Engineering**

01	Proposal for establishing a new department	C
02	Proposal review by Dean and various FEA committees	C

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			Incremental to AY '10-'11				
		AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16	
<b>FEA1137ME</b>	<b>Establish a Department of Chemical (and Petroleum?) Engineering</b>						
03	FEA vote on proposal	C					
04	Provost's Office	C					
05	Senate vote	C					
06	BOT vote	C					
07	Establish department	C					
08a	Appoint department chairperson	F	0.0	0.0	0.0	0.0	
08b	Appoint department chairperson	OE	\$0	\$0	\$0	\$0	
09	Administrative allowance	OE	\$0	\$0	\$6,000	\$6,000	
10	Four new faculty members	F	0.0	3.0	4.0	4.0	
11	Faculty salaries	OE	\$0	\$200,000	\$260,000	\$260,000	
12	Staff/Lab Technician	S	0.0	1.0	0.0	0.0	
13	Staff salary	OE	\$0	\$30,000	\$30,000	\$30,000	
14	Students	U	90.0	125.0	135.0	150.0	
15	Tuition income	OI	\$1,800,000	\$2,500,000	\$2,700,000	\$3,000,000	
16	Advertising and recruiting of faculty members	OE	\$30,000	\$10,000	\$0	\$0	

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

		Incremental to AY '10-'11				
		AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1137ME</b>	<b>Establish a Department of Chemical (and Petroleum?) Engineering</b>					
<b>SPU Comments:</b>						
The Chemical Engineering Program will soon graduate its first batch of BS students to be followed one year later with the first BE graduating class, the number of faculty is expected to increase from the current 4 to 10 in the coming three to four years. The number of students currently standing at 90 is expected to increase to around 150 by AY 2014-15. This initiative aims at establishing a Department of Chemical Engineering by 2013-14. The faculty salaries in AY 2012-13 include a senior faculty member joining.						
<b>FEA1138ME</b>	<b>Remodeling of the Mechanical Engineering GA room (moving labs and building a partition)</b>					
01	GA room remodeling and furnishing	C				
02	Estimate for remodeling the room to accommodate at least 6 PhD students and about 35 master's students	CE	\$0	\$25,000	\$0	\$0
03	Lab move and partition	CE	\$0	\$5,000	\$0	\$0
<b>SPU Comments:</b>						
The GA room situated in the SRB building currently does not provide structured space for small group or individual work areas. The location at the center of the lab area puts it in a high traffic area and therefore not conducive to focused work. In this initiative we propose to exchange the location of the GA room (with two doors) with the current Mechatronics / Instrumentation / Automatic Control Labs (co-located in one room and with one door). In its new location, the lab room will be divided into two separated areas with a movable partition. This will allow for parallel sessions to be scheduled for the control labs and instrumentation lab thus making better space use of the limited space available.						
<b>FEA1139ME</b>	<b>Faculty lines in Mechanical Engineering</b>					
01	2 Faculty Lines in Design and Manufacturing	F	0.0	2.0	2.0	2.0
02	Salary	OE	\$0	\$120,000	\$120,000	\$120,000

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

			Incremental to AY '10-'11				
			AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1139ME</b>	<b>Faculty lines in Mechanical Engineering</b>						
03	Faculty line in Bio-Mechanics	F	0.0	0.0	1.0	1.0	1.0
04	Recruitment cost	OE	\$0	\$10,000	\$0	\$0	\$0
05	Salary	OE	\$0	\$0	\$60,000	\$60,000	\$60,000
06	New faculty line in thermal and fluid track	F	0.0	0.0	1.0	1.0	1.0
07	Recruitment cost	OE	\$0	\$10,000	\$0	\$0	\$0
08	Salary	OE	\$0	\$0	\$60,000	\$60,000	\$60,000
09	New faculty line in CAE Track	F	0.0	0.0	0.0	1.0	1.0
10	Recruitment cost	OE	\$0	\$0	\$10,000	\$0	\$0
11	Salary	OE	\$0	\$0	\$0	\$60,000	\$60,000

**SPU Comments:**

The ME Department currently has 14 full time faculty members for an undergraduate student body of 420, one of the highest student to faculty ratio in the FEA. It has three vacant full time faculty lines two of which are currently advertised while the third is to be advertised in 2012-13.

In view of the increased number of undergraduate students and to cater for the graduate program that has been increasingly suffering in terms of course offerings the department will also need two additions faculty lines to be scheduled for 2013-14 and

**FEA1140EM      Establish an undergraduate program BE in Industrial Engineering (IE) within the new Department of Industrial**

- 01 Form a program committee to perform market study and feasibility analysis      C

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

		Incremental to AY '10-'11				
		AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1140EM</b>	<b>Establish an undergraduate program BE in Industrial Engineering (IE) within the new Department of Industrial</b>					
02	Develop a curriculum that will satisfy ABET	C				
03	Submit proposal to program faculty for approval	C				
04	Submit proposal to FEA academic and curriculum committees for approval	C				
05	Submit proposal for voting at FEA faculty	C				
06	Submit proposal for senate approval	C				
07	Submit proposal for BOD approval	C				
08	Submit proposal for BOT approval	C				
09	Register program in Lebanon and NY State	C				
10	Work Methods and Quality Assurance Lab	CE	\$0	\$0	\$0	\$0
11	Lab technician	S	0.0	0.0	1.0	1.0
12	Lab technician salary	OE	\$0	\$0	\$25,000	\$25,000
13	Advertising and recruiting of faculty members	OE	\$0	\$10,000	\$30,000	\$0
14	3 new faculty members (assistant / associate prof.)	F	0.0	0.0	1.0	3.0
15	Salary of new faculty	OE	\$0	\$0	\$60,000	\$180,000
16	Advertise and market new IE program	OE	\$0	\$0	\$0	\$0

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

				Incremental to AY '10-'11			
		AY '11-'12	AY '12-'13	AY '13-'14	AY '14-'15	AY '15-'16	
<b>FEA1140EM</b>	<b>Establish an undergraduate program BE in Industrial Engineering (IE) within the new Department of Industrial</b>						
17	Accept students for the BE degree*	U	0.0	0.0	25.0	50.0	75.0
18	Tuition income	OI	\$0	\$0	\$400,000	\$800,000	\$1,500,000

**SPU Comments:**

\* A four-year program capped at 40 students. Two additional faculty offices will be required; there should be space available when the IOEC is completed.

\*\* The WM/QA lab will have a dual purpose. First, it will be used to teach use of quality control tools and equipment. For this purpose, it will need an advanced laser coordinate measurement machine, optical comparator as well as various small pieces of precision measuring equipment. Second, the QM/QA lab will be used for teaching and practice in work measurements, and time and motion ergonomics studies. For this second purpose, it will need hardware and software for Multimedia Video Task Analysis (MVTA). This lab will be placed on the planned manufacturing floor and part of the planned labs for IOEC.

**FEA1141EM      Establish a Department of Industrial and Management Engineering**

01	Form a program committee to prepare documentation and proposal	C
02	Submit proposal to Dean	C
03	Discuss proposal with FEA Advisory / Administrative / FEA Strategic Planning Committees	C
04	FEA faculty voting on proposal	C
05	Send proposal to Provost	C
06	Submit for voting at the Senate	C

**American University of Beirut**  
**Initiative Details by Strategic Planning Unit (SPU)**

**Faculty of Engineering and Architecture**

		AY '11-'12	AY '12-'13	Incremental to AY '13-'14	AY '14-'15	AY '15-'16
<b>FEA1141EM</b>	<b>Establish a Department of Industrial and Management Engineering</b>					
07	Submit to BOT					
08	Establish the department					
09	Appoint a departmental chairman					
<b>SPU Comments:</b>						
<b>Appointing a chairperson will not include additional cost. There is currently a program coordinator who receives the administrative salary and course release.</b>						
	<b>SPU Capital Expenditures</b>	<b>\$0</b>	<b>\$106,000</b>	<b>\$65,000</b>	<b>\$75,000</b>	<b>\$35,000</b>
	<b>SPU Operating Expenditures</b>	<b>\$337,000</b>	<b>\$1,791,000</b>	<b>\$2,422,000</b>	<b>\$3,069,000</b>	<b>\$3,515,000</b>
	<b>SPU Capital Income</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>SPU Operating Income</b>	<b>\$1,830,000</b>	<b>\$2,740,000</b>	<b>\$4,415,000</b>	<b>\$5,525,000</b>	<b>\$6,445,000</b>
	<b>SPU Internal Funding</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>SPU External Funding</b>	<b>\$25,000</b>	<b>\$3,145,000</b>	<b>\$5,175,000</b>	<b>\$4,585,000</b>	<b>\$4,635,000</b>
	<b>SPU Undergraduate Students FTE</b>	<b>90.0</b>	<b>125.0</b>	<b>160.0</b>	<b>200.0</b>	<b>235.0</b>
	<b>SPU Graduate Students FTE</b>	<b>0.0</b>	<b>19.5</b>	<b>87.0</b>	<b>107.0</b>	<b>127.0</b>
	<b>SPU Faculty FTE</b>	<b>0.5</b>	<b>9.5</b>	<b>19.5</b>	<b>31.0</b>	<b>36.0</b>
	<b>SPU Staff FTE</b>	<b>1.0</b>	<b>7.0</b>	<b>10.0</b>	<b>10.0</b>	<b>10.0</b>

## Five year estimates

### Estimates of Students, Faculty, and Staff Faculty of Engineering and Architecture

TOTAL	2011-12	2012-13	2013-14	2014-15	2015-16
Undergraduate FTE Students	1,830	1,880*	1,930*	1,980*	2,000*
ME/MA/MS FTE Students	300	325	340	350	360**
PhD FTE Students	43	55	65	70	75
FT Faculty members	83	93	102	113.5	118.5
FTE Staff	48	54	58	58	58
FTE consultants/ outsourced labor	1	1	1	1	1

For CEC Only					
CEC student/ course count					
CEC instructor/ course count					

This table is for total (not incremental) people numbers

**Figures should tie-up with budget for 2011-12**

\* *minimum projected*

\*\* *80% paying tuition fees*

**Estimates of Faculty and Staff per Program/Department**  
**Faculty of Engineering and Architecture**  
**WORKING DRAFT**

TOTAL	Faculty/Staff	2011-12	2012-13	2013-14	2014-15	2015-16
ArD	Faculty	15	1	1(PhD)+1(UG)	1(PhD)+1(UG)	1
	Staff	1	1			
CEE	Faculty	18	1(Kharafi) + 1	1	0.5	0
	Staff	7	1			
ECE	Faculty	25	2	0	1	1
	Staff	5	1	1		
ME	Faculty	14	2	1(Therm)+1(Biom)	1(CAD/CAM)	0
	Staff	4				
CHEN	Faculty	4	3	1	1	1
	Staff	2	1			
EM/IE	Faculty	7	0	1	2	0
	Staff	1		1		
BME-PhD	Faculty	0	0	1	1	2
	Staff	0	0	1	0	0
Dean	Faculty	0	0	1	3	0
	Staff	19 + 4 (IT)	2			
Shops	Staff	5		1		
FEA	Total	83/48	93/54	102/58	113.5/58	118.5/58

## 9. FEA Key performance Indicators

### *Student Perspective*

#### **Excellent learning experiences (S.1)**

Specific questions from the Exit Surveys developed by the various departments  
Specific questions from the FEA Quality of Service Survey  
Rate of acceptance to graduate programs  
Student learning outcome assessment at program level

#### **Excellent personal and social growth (S.2)**

Specific questions from the Exit Surveys developed by the various departments  
Specific questions from the Alumni Surveys developed by the various departments  
Specific questions from the Employer Surveys developed by the various departments

#### **Excellent career prospects and leadership (S.3)**

Specific questions from the Exit Surveys developed by the various departments  
Specific questions from the Alumni Surveys developed by the various departments  
Data compiled by the Career Center

### *Internal process perspective*

#### **Up-to-date education design and delivery (I.1)**

Specific questions from the FEA Quality of Service Survey  
Specific questions from the Exit Surveys developed by the various departments  
Total number of courses offered on Web CT  
Total number of new courses offered  
Total number of courses with hands on experiences/ group work/ project requirements  
Number of programs that have completed program learning outcome assessment

#### **US accreditation compliance (I.2)**

CCE, CE, EE, and ME program accreditation from ABET  
Compliance with all Middle States Accreditation suggestions

#### **Modern facilities for education and research (I.3)**

Specific questions from the FEA Quality of Service Survey  
Specific questions from the Exit Surveys developed by the various departments

#### **Adequate support processes (I.4)**

Specific questions from the FEA Quality of Service Survey  
Specific questions from the Exit Surveys developed by the various departments

#### **Professional Societies and extracurricular activities (I.5)**

Affiliation of faculty members and students with professional societies  
Total number and scope of events and activities sponsored in the Faculty each year  
Percentage of the total number of the faculty members and students involved

### *Human Capital Perspective*

#### **Excellent faculty competencies and skills (H.1)**

Web of Science Data Base and/or SCOPUS  
Total number of quality publications per year  
Teaching evaluation reports (OIRA)  
Total number of professional consultancy projects

#### **Prepared and motivated work force (H.2)**

Specific questions from FEA Quality of Service Survey  
Evaluations of staff and faculty by dean, chairs and supervisors for merit increase and promotion

### **Climate for continuous improvement (H.3)**

The overall results of the FEA Quality of Service Survey  
Merit pay increases  
Teaching awards  
Service Excellence Award  
Promotion  
Transparency of decisions  
Equity of treatment  
The climate for continuous improvement created by the ABET process

### **Internal and external collaborative activities (H.4)**

Number of programs and projects in association with Faculties inside and outside of AUB  
Student enrollment in multidisciplinary programs

### ***Financial Perspective***

#### **Increased productivity of support services (F.1)**

Faculty to student ratio and staff to student ratio  
Net cost per full time student

#### **Contribute to university's fiscal balance (F.2)**

Total USD amount of endowments, gifts, and grants  
Full enrollment/total tuition fees  
Total number of graduate students

## **10. Stakeholders and their participation in the process**

Each department has an External Advisory Board that gives voice to international trends in the disciplines both from the perspective of employers/industry and academics. Our students give us feedback at town meetings and on surveys as well as through the student representatives on the departmental and Faculty committees. All the professional programs are cognizant of the requirements of their accreditation granting associations. Our connections with our alumni are growing as we develop our access to feedback from them through the internet. Finally, the Career Development Center (CDC) has close contact with employers, students, and alumni; the information provided to us in the comprehensive annual report submitted by the CDC gives us up to date information on our stakeholders.

## **11. Schedule of Strategic Performance Reviews**

The FEA monitors its strategic goals annually through the designated key performance indicators, after which a Balanced Score Card Report is compiled. The current strategic initiatives will be reviewed annually to assure that they are moving toward the targeted outcomes; the formal strategic plan will be completely reviewed after five years in AY 2015-16.

We believe it is important for the Faculty to continuously improve its research output, curriculum, teaching, service, and fund raising activities to best serve AUB, Lebanon, and the region.

The review process is led by the Administrative Committee whose members are the chairperson of each department, the Dean, and the Associate Dean, and the academic support person. This committee receives input from the strategic planning committees assigned in each of the five departments. In this procedure the strategic planning of the FEA is both a bottom up and a top down process in which many voices are heard.

## FEA STRATEGY MAP

