

**Faculty of Engineering and Architecture Research Committee (FEA RC)**

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**REPORT – FEA RESEARCH COMMITTEE  
(October 2003-June 2004)****SUMMARY**

The major activities of the Research Committee (FEA RC) during the year 2003-04 were three-fold: (1) review of the proposal review policy at FEA; (2) build a new FEA-RC Website; and (3) conduct the review process. The FEA RC received **32 proposals**, of which 6 proposals are group proposals. Two of the group proposals were joint applications with international faculty. One proposal was an inter-faculty between FEA and FAS. Each proposal was evaluated by two reviewers; 52% of the reviewers were from outside FEA. The proposals were distributed as follow:

Department/ Program	Number of Proposals	Requested Budget
Architecture	2	\$ 12,448.00
Mechanical	7	\$ 61,560.00
Electrical and Computer	13	\$ 95,100.00
Civil	6	\$ 57,190.00
Engineering Management	4	\$ 33,600.00
<b>Total</b>	32	\$259,898.00
Average per Proposal		\$ 8,121.81

The FEA-RC was not involved in reviewing proposals for outside funding; the FEA-RC was only informed about these applications and Chairman signed the application forms.

**REVIEW OF POLICIES AND PROCEDURES**

The FEA-RC did not have any written FEA Policies and Procedures regarding the review process of proposals submitted by FEA faculty. Therefore, we met for several times in order to write and finalize clear policies and procedures. In addition, we reviewed the existing score sheet and we did minor changes. The review policy is included in the Appendix A, the

score sheet for evaluating URB Research Proposals is in Appendix B, and the procedure to calculate the final composite number of each proposal is in Appendix C.

## **BUILDING OF FEA-RC WEBSITE**

<http://webfea.fea.aub.edu.lb/fea/research/committee.asp>

In order to have transparency in our work, we have established an FEA-RC website that contains all the information that a professor needs to prepare for and submit a proposal. We have sent a notice to all FEA Faculty informing them about the website and requested their feedback and unfortunately no one answered. The website contains the following information: Bylaws, Members, URB Application, Proposal Review Form (Score sheet), Review Policy, URB Guidelines, Funding Agencies, and Contact Us.

## **REVIEW PROCESS**

The deadline for submitting URB proposals was set to March 30, 2004, as specified by the URB. Before sending the proposals out for review, each proposal is screened to see if it met the criteria set by URB and FEA. Then, each proposal is sent to two reviewers for assessment. One reviewer was selected from FEA and the second was selected from outside FEA including some international reviewers. The committee acted as a quality controller for the review process. The evaluation of each reviewer was appraised to insure its consistency with the proposal.

*The percentage of reviewers from outside FEA was 48%. The distribution of reviewers was as follows: 52% from FEA; 19% from AUB excluding FEA; 16% from Lebanon excluding AUB; and 13% from overseas.*

After the final composite number, average of the two reviewers, of each proposal was determined (see Appendix C); the proposals were classified under four categories: Highly Recommended, Strongly Recommended, Recommended, and Not Recommended. Although this classification scheme is proposed by URB, the FEA-RC believes that most of them are of equal quality. The final recommendations that will be submitted to URB is as follow:

Category	Number	Percentage (%)
Highly Recommended	7	22
Strongly Recommended	21	66
Recommended	3	9
Not Recommended	1	3
<b>Total</b>	32	100

Historically, the total FEA URB research funding averaged around \$ 160,000 each year. In order to work around this number and to guarantee funding for quality FEA proposals, we have to reduce the funding of each proposal using the following formulas:

Highly Recommended	$5000 + (\text{Requested Budget} - 5000) * 0.5$
Strongly Recommended	$5000 + (\text{Requested Budget} - 5000) * 0.3$
Recommended	$5000 + (\text{Requested Budget} - 5000) * 0.15$
Not Recommended	0

The initially total requested budget was \$ 259,898.00. Using the above mentioned formulas, the budget was reduced to \$187,955 for all the categories. Appendix D contains the final recommendations of the FEA-RC that will be submitted to URB.

### **Lessons Learned and Recommended Changes**

The committee has met during the month of May to finalize the recommendations to URB and evaluate our work. We have noticed that that most FEA reviewers gave high scores to proposals. Therefore, we are recommending the following changes for next year:

1. Remove names of authors from the proposals to make the review process blind.
2. The Research Committee should select the referees and all referees should be selected from outside FEA. Therefore, we need to build a reviewers database.
3. Make the deadline for submission of FEA proposals March 1 and don't accept proposals after that deadline to allow enough time for the review process.
4. Continuously review FEA-RC review policy early in the Fall Semester and make it available on the web to the Faculty in order to have a transparent process.
5. In the letter sent to reviewers, don't include other RC members' names. It is confusing reviewers.

### **Appendices**

Appendix A. The FEA The review policy

Appendix B. The Score Sheet for evaluating URB Research

Appendix C. The Procedure to calculate the final composite score of each proposal

Appendix D. The Final Recommendations of the FEA-RC submitted to URB

# **Appendix A**

## **The FEA The review policy**

## Faculty of Engineering and Architecture

### Review Policy of FEA Research Proposals (March 17, 2004)

The primary aim of the Research Committee of the Faculty of Engineering and Architecture (RC) is to help investigators achieve their research objectives by assisting them in applying for funds to complete their work. For the past two years, the RC has been repeatedly reviewing the system for processing of research proposals, with the aim of standardizing the evaluation process. The following facts prompt and justify periodic re-assessment of policy:

1. the increasing number of proposals being submitted per year and required funds
2. the insufficiency of present resources to support all the funding needs of submitted proposals
3. the need, therefore, to set lists of priority for funding proposals based on objective criteria
4. more funding priority is now given to junior faculty

The following points describe the process and the governing policies for grant applications, review and funding:

1. All proposals must closely follow a set of instructions and **guidelines** set by URB.
2. Each proposal will be screened initially by the RC. If all documents are available, and provided the proposal meets with the minimal requirements described in the instructions, the RC will seek the opinion of at least one reviewer from A.U.B. and of at least one expert chosen from local or international institutions.
3. The reviewers will submit a written critique of the proposal, make comments and recommendations, and fill a **Score Sheet** provided by the RC.
4. The RC, after studying the proposal carefully, will assign to each proposal a priority score, based upon each reviewer's recommendation and score, as well as the productivity of the investigators. Those proposals which are not funded during one year may be resubmitted during the following year. Investigators are urged not to inflate their budgets.
5. Investigators may submit proposals requesting funding for more than one year and up to three years provided that they submit a detailed progress report when submitting a proposal for renewal of their projects. Funds are given on a yearly basis. An investigator cannot apply for renewal of his/her existing project unless it was approved previously by RC.
6. The RC will present its final recommendations to the URB.

## **Appendix B**

# **The Score Sheet for evaluating URB Research**



## Score Sheet for Evaluating URB Research Proposals

Faculty of Engineering and Architecture

American University of Beirut

The University Research Board (URB) at the American University of Beirut awards funds for quality research on a **competitive** basis across University Faculties. The program is supported by University funds and as such considers proposals of modest budgets in the range of \$4000 - \$5000, although exceptionally, awards can be granted in amounts up to \$10,000. Group projects, consisting of more than one distinct research proposal having related research goals or interests, are encouraged. Group projects include more than one principal investigator.

The evaluation of URB research proposals will be based on five categories, namely, quality, significance, methodology, feasibility, and budget. Each question in every category should be given a score from 1 to 5 reflecting the level of satisfaction of the reviewer as follows:

<i>Score</i>	<i>Level of satisfaction</i>
5	Maximum
4	Above Average
3	Average
2	Below Average
1	Minimum

<b>Project Title:</b>	
<b>I.</b>	<b>Quality</b>
1	The abstract is adequate <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
2	The objectives are clearly defined <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
3	The proposal is well written <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
4	The literature on the topic is well reviewed <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
<b>II.</b>	<b>Significance</b>
5	The proposed work adds to the body of knowledge in the specific area (s) of research <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
6	The proposed work is innovative and original <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5

<b>III.</b>	<b>Methodology</b>					
7	The proposed methodology is adequate and its limitations are well described	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
8	The tasks to be carried out are well defined	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
<b>IV.</b>	<b>Feasibility</b>					
9	A project timetable/schedule is included and is consistent with the objectives	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
10	The investigator is aware of the necessary logistics needed for the project	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
<b>V.</b>	<b>Budget</b>					
11	The proposed budget is well itemized	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
12	The proposed budget is consistent with the proposed activities and logistics needed	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

**RECOMMENDATION**

**(Please circle)**

- A. Highly Recommended**
- B. Strongly Recommended**
- C. Recommended**
- D. Not Recommended**

**PLEASE GIVE ADDITIONAL HELPFUL COMMENTS FOR AUTHORS AND YOUR OVERALL IMPRESSION ABOUT THIS PROPOSAL.**

## **Appendix C**

### **The Procedure to calculate the final composite score of each proposal**

### **The Procedure to calculate the final composite number of each proposal**

Reviewers are asked to evaluate the proposal at hand using the provided Score Sheet. The Score Sheet has two sections. The first section has 12 questions and for each question reviewers are asked to put a subjective score using the following scale:

<i>Score</i>	<i>Level of satisfaction</i>
5	Maximum
4	Above Average
3	Average
2	Below Average
1	Minimum

The 12 questions are distributed over 5 categories as follow:

1. Quality	Four Questions
2. Significance	Two Questions
4. Methodology	Two Questions
4. Feasibility	Two Questions
5. Budget	Two Questions

In the second section, reviewers are asked to give their final overall recommendation on the proposal using the following recommendation categories:

- E. Highly Recommended
- F. Strongly Recommended
- G. Recommended
- H. Not Recommended

### **Using Multi-Criteria Decision Making Model**

In order to structure our process, we used a Multi-Criteria decision making process in order to come-up with a final numerical composite score for each reviewer's score sheet. Therefore, we had to assign weights for each of the two sections in the score sheet including the subsequent sub-sections. The weights are distribution was as follow:

<b>Section</b>	<b>Weight</b>
I. Proposal	0.5
1. Quality	0.2
2. Significance	0.3
4. Methodology	0.3
4. Feasibility	0.1
5. Budget	0.1
II. Final Decision	0.5
Highly Recommended	5
Strongly Recommended	4
Recommended	3
Not Recommended	0

The Composite Score for Each Reviewer is determined by using the following formula:

$[(\text{Sum of Answers of Quality questions} / 4) 0.2 + (\text{Sum of Answers of Significance questions} / 2) 0.3 + (\text{Sum of Answers of Methodology questions} / 2) 0.3 + (\text{Sum of Answers of Significance questions} / 2) 0.3 + (\text{Sum of Answers of Feasibility questions} / 2) 0.1 + \text{Sum of Answers of Budget questions} / 2) 0.1] * 0.5 + [\text{Final Decision}] * 0.5$

The Final composite score of each proposal is equal to average composite score of two reviewers.

## **Appendix D**

# **The Final Recommendations of the FEA- RC submitted to URB**

<u>Title of Proposal</u>	<u>Author</u>	<u>Co-Author</u>	<u>Req Budget</u>	<u>Recom. Funding</u>	<u>Ref Sc</u>	<u>Rng</u>	<u>Final RC Recom.</u>	<u>%</u>
A Fully Coupled Pressure-Based Algorithm for Incompressible Flows	Fadl Moukalled	None	\$ 10,000.00	\$ 7,500.00	4.98	0	Highly Recommended	3%
Optical Regeneration for Binary Signaling	Ibrahim Abou Faysal	None	\$ 8,000.00	\$ 6,500.00	4.975	0	Highly Recommended	6%
Low-Sidelobe Adjustable-Beamwidth Planar Arrays	Ali Hajj	None	\$ 6,000.00	\$ 5,500.00	4.95	0.1	Highly Recommended	9%
Uniform Circular Arrays with Modified-Chebyshev and Bessel Patterns	Karim Kabalan	None	\$ 5,600.00	\$ 5,300.00	4.95	0	Highly Recommended	13%
Decision Support Framework for Integrated Olive Oil Mill Waste Management	Christos C. Anastasiou	None	\$ 8,000.00	\$ 6,500.00	4.938	0.13	Highly Recommended	16%
Assessment and Environmental Management of Polychlorinated Biphenyls (PCBs) in the Power Industry.	Farid Chaaban	Najat Saliba	\$ 9,200.00	\$ 7,100.00	4.913	0.1	Highly Recommended	19%
Capacity-Approaching Turbo-Like Codes: High-Performance Design and Implementation	Mohamad Mansour	None	\$ 10,000.00	\$ 7,500.00	4.913	0.2	Highly Recommended	22%
Accounting for Environmental and Technological Uncertainty in the interaction Value Framework	Walid Nasrallah	None	\$ 5,000.00	\$ 5,000.00	4.9	0	Strongly Recommended	25%
Iconography of Political Parties in Lebanon's Civil War	Zeina Maasri	None	\$ 6,380.00	\$ 5,414.00	4.9	0.2	Strongly Recommended	28%
Aerosol Inhalation Toxicology of the Argileh Water Pipe	Alain Shihadeh	None	\$ 8,900.00	\$ 6,170.00	4.89	0.1	Strongly Recommended	31%

Experimental and Theoretical Modeling of Three-dimensional Clothing Ventilation for a Walking Human	Nesreen Ghaddar	Kamel Ghali	\$ 8,800.00	\$ 6,140.00	4.89	0.1	<b>Strongly Recommended</b>	34%
Slope Stabilization Using Piles	Salah Sadek	None	\$ 9,000.00	\$ 6,200.00	4.888	0.08	<b>Strongly Recommended</b>	38%
A New Design For Vibration Control of Structures Using SMA actuators	Ahmad Smaili	none	\$ 7,800.00	\$ 5,840.00	4.85	0.1	<b>Strongly Recommended</b>	44%
Building Knowledge Management Systems in Engineering Consulting Firms	Toufic Mezher	None	\$ 9,000.00	\$ 6,200.00	4.85	0.25	<b>Strongly Recommended</b>	41%
Custom Instruction Generation for Reconfigurable Functional Units in Application-Specific Programmable Processors	Mazen Saghir	None	\$ 9,400.00	\$ 6,320.00	4.838	0.3	<b>Strongly Recommended</b>	47%
Minimum Distance of Error Correcting Codes versus Encoding Complexity, Symmetry, and Pseudorandomness	Louay Baazi	None	\$ 5,800.00	\$ 5,240.00	4.825	0.2	<b>Strongly Recommended</b>	50%
Mobile Agent Frameworks for Enhanced Security and Wireless Device Support	Artail	A. Kaysi - A. Chehab	\$ 18,000.00	\$ 8,900.00	4.813	0	<b>Strongly Recommended</b>	53%
Unit Commitment Problem Using Lagrangian Relaxation and Evolutionary Programming	Khali Hindi	Sami Karaki	\$ 9,600.00	\$ 6,380.00	4.788	0.075	<b>Strongly Recommended</b>	56%
Parallelization of a Finite-Volume CFD Code for use On Clusters of PC's	Marwan Darwish	None	\$ 10,000.00	\$ 6,500.00	4.69	0.5	<b>Strongly Recommended</b>	59%
Web-Based Project Management and its Applications to Construction Projects	Asem Abdulmalak	None	\$ 10,000.00	\$ 6,500.00	4.675	0.25	<b>Strongly Recommended</b>	63%
Contaminant Transport In Water Distribution Systems	Habib Basha	None	\$ 6,000.00	\$ 5,300.00	4.613	0.08	<b>Strongly Recommended</b>	66%

Smartslam – A Context-Based Approach To Landmark Representation Using Vision	Samer Abdallah	Daniel C. Asmar and John S. Zelek	\$ 9,500.00	\$ 6,350.00	4.48	0.6	<b>Strongly Recommended</b>	69%
SUMMERS IN AIN SOFAR: Self-Representation and the <i>Mustafeen</i> at Home.	Sylvia Shorto	None	\$ 6,068.00	\$ 5,320.40	4.33	0.7	<b>Strongly Recommended</b>	72%
Developing an ArchHydro Geodatabase For Lebanon: Prototype Phase	Hamed Assaf	None	\$ 6,190.00	\$ 5,357.00	4.263	1.18	<b>Strongly Recommended</b>	75%
Cost Benefit Analysis of Natural Gas Utilization in the Electricity Sector of Lebanon	Riad Chaedid	None	\$ 5,500.00	\$ 5,150.00	4.2	0.3	<b>Strongly Recommended</b>	78%
Bond Strength of Hot-Dip Galvanized Hooked Bars in Beam-Column Joints	Bilal Hamad	None	\$ 7,000.00	\$ 5,600.00	4.188	1.33	<b>Strongly Recommended</b>	81%
Novel Lowpass IIR Digital Differentiators	Adnan Alaoui	None	\$ 6,000.00	\$ 5,300.00	4.113	0	<b>Strongly Recommended</b>	84%
Experimental testing of the neurophysiological basis of oscillatory cortical dynamics	Fadi Karamah	None	\$ 5,000.00	\$ 5,000.00	4.025	0.3	<b>Strongly Recommended</b>	88%
Learning Theory as applied to CAD Training of Novices	Ramzi Hamadeh	None	\$ 6,560.00	\$ 5,234.00	3.88	1.6	<b>Recommended</b>	91%
Design Of A Remote Experimentation Framework And Infrastructure For Engineering Labs	Mounir Mabsout	Ali El-Hajj, Ayman Kayssi, and Ahmad Smaili	\$ 21,000.00	\$ 7,400.00	3.875	1.8	<b>Recommended</b>	94%

A Novel Method for Electrostatic Field Calculations	Sami Karaki	Ernst Huijjer	\$ 6,600.00	\$ 5,240.00	3.585	0.5	<b>Recommended</b>	97%
High Performance Reconfigurable Computing For Cryptographic Algorithms	Hassan Diab	None	\$ -	\$ -	0	0	<b>Not Recommended</b>	100%