*Seu modelo de prova está na página seguinte

Curso de Inglês Instrumental Online

preparatório para Provas de Proficiência do Mestrado e Doutorado com Certificado de Proficiência

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ING 2

EXAME DE PROFICIÊNCIA EM LÍNGUA INGLESA PARA PROCESSOS SELETIVOS DE PROGRAMAS DE PÓS-GRADUAÇÃO DA UFMG

ÁREA Nº 02: CIÊNCIAS EXATAS E DA TERRA, ENGENHARIAS

IDENTIFICAÇÃO

CPF:

DATA: / /	**NOTA:**

INSTRUÇÕES:

1. Esta prova é constituída de 1 (um) texto em língua inglesa, seguido de 5 (cinco) questões abertas, totalizando, com esta folha de rosto, 6 (seis) páginas. Caso identifique algum problema, solicite a substituição da prova.

2. Leia atentamente o texto e responda às questões propostas. As questões deverão ser respondidas em **português**, **a tinta** (cor azul ou preta; provas respondidas a lápis **não serão corrigidas**) e com letra **legível.**

3. A duração da prova é de **3** (três) **horas.**

4. É permitido o uso de dicionário impresso. O candidato deverá utilizar seu próprio exemplar.

5. Os rascunhos deverão ser entregues ao examinador, junto com a prova: texto e questões.

6. Responda às questões **de acordo com o texto**.

Texto:

The Environmental Engineering curriculum and sustainability

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Background

The expression “sustainable development” became “vox populli” after the United Nation’s World Commission on Environment & Development (Brundtland Commission) pushed it forward in its 1987 report titled “Our Common Future”. The commission defined sustainable development as “…development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Based on that report and the work of many other government and non government organizations along the work of professional societies, it has been established that society’s current rate of consumption of resources and ecological services cannot be sustained much longer and the consequent damages to environmental systems are reaching unprecedented levels from which recovery could be impossible. From local effects like pollution of water bodies to global climate change coupled with the current growth rate of the human population, it has become obvious that a major change is needed in the way we do business. There is now overwhelming consensus that human activity has had detrimental effects on natural environmental cycles. Effective action on sustainability has been proposed to address three pillars: environment, society and economy. Though, these pillars are intrinsically linked, focus has been substantially the environmental component of sustainability.

The Current State

The principles of sustainability, green design, design for environment, life cycle design, industrial ecology, and pollution prevention have been touted by various sectors of the society and have attracted professionals from a wide variety of disciplines. However, there have not been many tangible ideas on how to make these principles operational. As noted by Ivan Amato, Managing Editor of Chemical & Engineering News, “The sustainability ethic may be infiltrating the mind-set of a widening swath of humanity, but there also is a collective shoulder-shrug about how to realize it”. While recognition and acknowledgement of the problem was a crucial step, formulating and implementing the solutions is even more imperative especially considering the multi-faceted nature of the sustainability model. A major gap exists between theory and practice and no clear protocols have been developed for achieving either environmental impact abatement or sustainability. What is required is the identification and development of niche areas of specialization working within the holistic multidisciplinary context of sustainable development.

Environmental Engineering as a distinct field is relatively new. Beginning as a specialization field under Civil Engineering and still being taught as such in many Universities and Colleges, the Environmental Engineering profession has been increasingly attracting

professionals from diverse backgrounds. Arguably, a state of flux currently exists regarding what defines environmental engineering and how these definitions fit into future roles for environmental engineers. Traditionally environmental engineers have solved most pollution problems retroactively but current challenges facing society require a more proactive orientation to the teaching and practice of the profession.

There have been calls for the introduction of sustainable engineering concepts in the teaching of various classes across engineering departments to promote an awareness of sustainability and environmental impact issues and produce environmentally conscious engineers. Some schools have introduced a few new courses leading to minors or certifications to achieve this goal. However, these programs are no substitute for producing engineers with core expertise in understanding the nature of the challenges and providing engineering based solutions.

Environmental Engineers are arguably the best positioned to play this pivotal role. The traditional environmental engineering curricula inculcate science and engineering principles and relationships that govern the various environmental media, soil sediments, air, water and biota, and the impact of artificial intrusions on them. A current draft of the "Environmental Engineering Body of Knowledge" document put forth by the American Academy of Environmental Engineers proposes the inclusion of sustainability as an outcome of Environmental Engineering education. The document notes: "It is expected that environmental engineers have sufficient understanding of natural system; that is how our earth functions, to help define the extent of environmental alteration that may result from different engineered systems".

Environmental technology has been grouped into four generations of development by the International Institute for Sustainable Development; remediation, abatement, pollution prevention and sustainable technologies. Pollution prevention and sustainable technologies have also been identified as the least developed. Pollution prevention emphasizes a proactive reduction or elimination of wastes and pollutants at the source of generation as opposed to a reactive approach to deal with pollution after it happens. The integration of environmental considerations into the product development process, product and process design procedures based on scientific principles and information as well as the development of analytical tools to identify and evaluate the upstream and downstream environmental effects associated with a product or activity, are areas of potential activity for environmental engineers. The development of alternative chemicals, reaction conditions and processes, which decrease materials and energy use as well as reduce pollution are also integral to achieving the objectives of impact abatement and sustainable growth. While systems-based models are currently being proposed, any such model will still be reliant on core scientific and engineering principles to be relevant. This is where the environmental engineering professional can make major contributions.

Proposed Changes

In order to meet the challenges of sustainability, the scope of environmental engineering must expand to include the assessment of potential environmental impacts during design, production, use and disposal as they apply to products, processes, and procedures. The ideal goal of the environmental engineer's professional activities should be the preservation of the natural endowment while satisfying societal needs. Although there may be several approaches to achieve this goal, all of them will involve careful selection of materials and processes in order to minimize or eliminate the need for remediation/abatement in addition

to developing sustainable remediation techniques if and when there is a need to do so. Knowledge of methods of assessing upstream and downstream impacts of manufacturing, raw materials and energy choices, transportation, and effluent quality disposal should be incorporated into the breadth of an expanded curriculum. The methodology is 2-fold: i) identify traditional courses that can be modified and expanded to incorporate principles of sustainability and ii) introduction of courses that bring the students the holistic view and tools to move the profession into more sustainable grounds.

Although some of these principles have already been included in the traditional curriculum, in general their inclusion relates more to efficiency and financial issues than to pursue sustainable engineering practices. This impression of the authors is based on the fact that intergenerational equity in general is not considered in these courses.

It is commonly accepted that the environmental engineer must show core expertise in several key areas such as environmental chemistry, physico-chemical treatment processes, biological treatment process, and environmental fate and transport of pollutants. These courses should be the first to be targeted to introduce sustainable issues to the students by introducing, within the scope of the course, concepts such as Industrial Ecology, Environmental Justice, Environmental Impact Categorization and Life Cycle Assessment. Moreover, these concepts should also be incorporated into other courses that define the future professional area of expertise or interest (i.e., groundwater hydrology, watershed management, soil and groundwater remediation, hazardous waste management, solid waste management, air pollution control, etc.).

The authors are aware that the demands of the programs, course requirements and outcomes to be satisfied do not allow for deep coverage of these new issues and identify this as one of the major challenges faced by the faculty. For example, remedial design classes should be structured to emphasize sustainable remediation and a broader horizon of evaluation for the impact of any proposed remediation scheme.

Fonte: In: http://s3.amazonaws.com/academia.edu.documents/30930859/Braida_final.pdf
Acesso: Outubro 2015 (fragmento).

Questões:

1. O que Ivan Amato afirma sobre a ‘ética da sustentabilidade’ e a operacionalização de seus princípios?

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2. De acordo com o documento da Academia de Engenheiros Ambientais (*Academy of Environmental Engineers*), o que é esperado da formação desses profissionais?

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3. Em que consiste o objetivo da atividade profissional na área de engenharia ambiental? Como esse objetivo pode ser atingido?

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4. Em que consiste a metodologia utilizada para ampliar o currículo dos cursos de engenharia ambiental?

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5. Que mudanças curriculares o texto propõe em relação às áreas-chave na formação do engenheiro ambiental?

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