Review of Bioengineering codes

Purpose

Members of the Bioengineering community, headed by the Head of Department of Bioengineering, Imperial College London, forwarded proposed new codes to be included in the JACS 3.0 classification.

They believe that Bioengineering should be removed from H673 and placed at a higher level, with space for expansion beneath to reflect that Bioengineering is a fast-evolving field is now a well-defined discipline in its own right. It is anticipated that the evolution of the discipline will continue and more and more institutions are offering postgraduate taught courses and PhDs, as well as it being a topic for undergraduate teaching.

The final recommendations described below are the culmination of work undertaken by Bioengineering community but with guidance from HESA.

Changes to be implemented

1) Remove H673

H673	Bioengineering	The study of the principles of engineering as they apply to the design and manufacture of aids, such as artificial limbs, to rectify defective body functions.

2) Create a new higher level code, label and description for Bioengineering H160

H160	Bioengineering, Biomedical Engineering and Clinical Engineering	The study of the principles of engineering as they apply to biological and bio-medical systems.

3) Create new codes, labels and descriptions for a series of related subjects

H161	Biomaterials	The design, study and construction of materials for interaction with living systems. Includes medical materials.
H162	Biomechanics (including fluid and solid mechanics)	The study of how cells, tissues and organisms generate and respond to forces.
H163	Bioelectronics and Bioelectricity.	The study of electrical phenomena in living systems.

H164	Rehabilitation Engineering	The development and study of assistive devices, including prosthetics, that can promote or substitute for lost or reduced functional capabilities.
H165	Tissue Engineering and Regenerative Medicine.	The use of engineering principles to design and manufacture replacement tissues.
H166	Imaging.	The use of physical and engineering principles to create devices, systems and algorithms to visualise biological and medical structures and functions.
H167	Biosensors.	The design, development and study of devices that detect, record and transmit information regarding a physiological change in the body or the presence of various chemical or biological materials in the environment.
H168	Medical Devices and Instrumentation.	The design and development of devices used for the purpose of diagnosis, prevention, monitoring or treatment of disease.
H169	Neural Engineering.	The use of engineering techniques to understand, repair, replace, enhance or treat the diseases of the nervous system; and the design of systems and devices based on the nervous system.

4) The proposed new H161 code means that it is necessary to alter the label and description of the existing B830 (Biomechanics, biomaterials & prosthetics (non-clinical). Biomaterials has been removed from the label and description of B830 as (the reason provided by the Bioengineering community) *the subject has grown to such an extent that it merits a separate descriptor and it is generally accepted that it is part of Bioengineering.*

B830 in JACS 2.0 is:

B830	Biomechanics, biomaterials & prosthetics (non-clinical)	The study of the mechanical laws relating to the movement and structure of the human body. Also the design and construction of artificial materials and devices for the purpose of regulating/replacing human tissues, organs or limbs.

The proposed B830 for inclusion in JACS 3.0 is:

B830	Biomechanics and prosthetics (non-clinical)	The study of the mechanical laws relating to the movement and structure of the human body.

There are no other required changes to existing codes in JACS 2.0 as a result of these proposals.