

Hemodynamic Simulator II (P09026)

To be finalized by Friday, Sep - 26th - 2008.

Specifications

Engr. Spec. #	Source	Specification (description)	Unit of Measure	Ideal Value	Comments/Status
Fluid (BLOOD)					
ES1	Cutnell, John & Johnson, Kenneth. <i>Physics, Fourth Edition</i> . Wiley, 1998: 308.	Viscosity	N-s/m ²	0.0027	At 37°C
ES2	Cutnell, John & Johnson, Kenneth. <i>Physics, Fourth Edition</i> . Wiley, 1998: 308.	Density	kg/m ³	1060	At 37°C
ES3	Taggart, Starr and Cecie Starr. <i>Biology: The Unity and Diversity of Life</i> . California: Wadsworth, 1989: 398.	Volume	liter	5	With variation of +/-20%
Heart Chamber					
ES4	http://www.fi.edu/learn/heart/development/development.html	Normal Heart Rate	Beats per minute	120 - Infant 70 - Adult	
ES5	http://www.bbc.co.uk/science/humanbody/body/factfiles/heart/heartbeat.shtml	Max. Heart Rate	Beats per minute	220	With variation of +/-5%
ES6	http://gaps.anest.ufl.edu/palm/files/formulas/13.html	Systemic Vascular Resistance	MPa-s/m ³	90-120	Normal
ES7	http://www.eie.polyu.edu.hk/~ensmall/eie448/EIE448/Notes_files/topic2.pdf	Circulatory System total length	meters	10 ⁸	
Propagation Velocities					
ES8	http://www.eie.polyu.edu.hk/~ensmall/eie448/EIE448/Notes_files/topic2.pdf	Atria	m/s	1	
ES9	http://www.eie.polyu.edu.hk/~ensmall/eie448/EIE448/Notes_files/topic2.pdf	AV Node	m/s	0.05	
ES10	http://www.eie.polyu.edu.hk/~ensmall/eie448/EIE448/Notes_files/topic2.pdf	Purkinje Fibres	m/s	3	
ES11	http://www.eie.polyu.edu.hk/~ensmall/eie448/EIE448/Notes_files/topic2.pdf	Ventricles	m/s	0.5	
Physical Dimensions					
ES12		Cart Size	inches	21.5 x 38.5	
ES13		Height	inches	72	
ES14		Location of the heart	feet	5	w.r.t the floor (eye level)
Overall System & Safety					
ES15		Control Software		LabVIEW	
ES16		Computer Control			
ES17	http://www.dangerousdecibels.org/faq.cfm	Noise Level	dB	20-40	Computer fan is about 25 dB, the humming of a refrigerator is 40 dB
ES18		Emergency Stop Button			
ES19		Easy to drain			
ES20		Fluid			should have similar characteristics as blood
ES21		Functioning Time	hours	8	
ES22		Aesthetically Pleasing			Polished, clean
ES23		A/C Voltage supply			
ES24		Safety		Ground Default System	Similar to the bathroom electric outlets

Revision	Author	Comments
#1	Liliane Pereira	
#2	Gaurav Zirath	Added Physical Dimensions
#3	Liliane Pereira	Added Overall System & Safety
#4		
#5		
#6		
#7		