**This is the detailed document considering the teaching in term 1 of year 1 from October 2012 onwards.**

**Getting this right will be critical, as it is one of aspects that we are taking over from FoNS.**

**Suggestions to create year 1 in BMS:**

**Identify the academic leads for the different themes covered in each term.**

This should be easy for terms 2 & 3, as the current leaders would be the place to start.

New leaders would be needed for term 1.

Responsibility for detailed content could then be delegated to these Academic Leads.

I would favour having 2 leaders per theme, to spread the workload and also provide cover if a leader is unavailable unexpectedly.

**Re-structure the themes of MCD1**

How this might work is shown on the next pages, but the idea would be to produce a different coding system to emphasise that the BMS course is not an offshoot of the MBBS.

Additional material (lectures or tutorials) can then be included very simply and be independent of the MBBS.

**The Immunology component will be titled as such, so ensure it is clearly part of the ‘Integral systems’ teaching.**

The exact content of this needs additional thought, and perhaps expert input.

**The list on the following pages implies 100 contact sessions:**

For an 11 week term, this would seem a good start.

There are almost certainly duplicated topics.

We would want to add sessions (eg tutorials, transferable skills, overall course introduction, overview of human anatomy & evolution, practical classes)**Year 1 themes, derived from information on pages 5-7.**

Explanation of the lists.

Material from current MCD1 course is shown in normal type, with identification numbers drawn from the MCD1 programme.

*Topics that at partially covered by MCD1 teaching are shown in italics. Note that sometimes the MCD 1 teaching will be in a different section.*

**Topics not covered within MCD1, but needed for this course, are in bold.**

Chemistry and biochemistry of bio-molecules. (n=16)

**Atomic structure**

**Chemical bonds**

*Molecular structure*

**Bonds & orbitals**

**Chirality**

**Acids & bases**

**Water & H-bonding**

**Chemical reactions**

**Reaction mechanisms**

*Sugars*

*Polysaccharides*

*Lipids*

*Amino acids*

*Protein structure*

*Nucleotides*

*Nucleic acids*

The biology of cells and tissues. (n=21)

1 Cells and organelles

2 Infectious agents

3 Cell membranes

4 Blood and Blood Cells

Tissues

1 Epithelial cells

2 Epithelial tissues

3 Extracellular matrix biology I

4 Extracellular matrix biology II

5 Fluid compartments of the body

6 Nerve

7 Muscle

8 Signalling between cells I

9 Signalling between cells II

*Cell signalling*

**Cell cycle**

**Cell cycle regulation**

**Cytoskeleton**

**Microfilaments**

**Intermediate fibres**

**Mitotic spindle**

**Cell junctions**

Metabolism (including enzymes and energetics) (n=22)

1 Introduction to protein structure

2 Energetics and enzymes

3 Metabolic pathways and ATP production I

4 Metabolic pathways & ATP production II

5 Mitochondria and oxidative phosphorylation

6 Lipids and membranes

7 Cholesterol

8 Membrane trafficking

9 Integration of metabolism

*Redox reactions*

*Reaction kinetics*

*Enzyme catalysis*

*Enzyme analysis*

*Enzyme inhibition*

*Cell respiration*

*Glycolysis*

*Krebs cycle*

**Special membranes**

*Membrane transport*

*Mitochondria*

*Chemiosmosis*

**Membrane electrogenesis**

Nucleic acids, genes and genetics (n=18)

1 Nucleic acids and chromosomes

2 DNA replication, the cell cycle and mitosis

3 Gene organisation & transcription I

4 Gene organisation & transcription II

5 Protein translation and post translational modification

6 Analysis of nucleic acids

Genetics:

1 Mrs Jones’ first consultation

2 Mrs Jones (2) – risk of transmission of genetic disease

3 More stories from the genetics clinic

4 Cancer in families and individuals

5 Prenatal diagnosis of genetic diseases

6 Complex genetic diseases – can genes make us fat?

7 The future of genomic medicine

*DNA sequencing*

*RNA processing*

*RNA regulation*

**Meiosis**

*Mapping*

Immunology & infection (n=23)

1 Introduction to immunology

2 Immune cells and organs

3 Innate immunity

4 Antibodies

5 B-lymphocytes

6 T-lymphocytes and antigen recognition

7 Effector T-lymphocytes

8 Host defence overview

Cell pathology

1 Cell injury

2 Haemodynamic disorders

3 Inflammation

4 The autopsy

5 Cancer

6 Cell pathology case studies

Microbiology

1 Bacterial properties

2 Bacterial diseases

3 Hospital acquired infection and antibiotic resistance

4 Fungal Infection

5 Viral properties

6 Viral disease I

7 Viral disease II

8 Prevention and treatment of viral disease

9 Defence and vaccination against bacteria

**List of the themes currently taught in term 1 from MCD**

Cells:

1 Cells and organelles

2 Infectious agents

3 Cell membranes

4 Blood and Blood Cells

Metabolism:

1 Introduction to protein structure

2 Energetics and enzymes

3 Metabolic pathways and ATP production I

4 Metabolic pathways & ATP production II

5 Mitochondria and oxidative phosphorylation

6 Lipids and membranes

7 Cholesterol

8 Membrane trafficking

9 Integration of metabolism

Nucleic acids:

1 Nucleic acids and chromosomes

2 DNA replication, the cell cycle and mitosis

3 Gene organisation & transcription I

4 Gene organisation & transcription II

5 Protein translation and post translational modification

6 Analysis of nucleic acids

Genetics:

1 Mrs Jones’ first consultation

2 Mrs Jones (2) – risk of transmission of genetic disease

3 More stories from the genetics clinic

4 Cancer in families and individuals

5 Prenatal diagnosis of genetic diseases

6 Complex genetic diseases – can genes make us fat?

7 The future of genomic medicine

Tissues

1 Epithelial cells

2 Epithelial tissues

3 Extracellular matrix biology I

4 Extracellular matrix biology II

5 Fluid compartments of the body

6 Nerve

7 Muscle

8 Signalling between cells I

9 Signalling between cells II

Immunology

1 Introduction to immunology

2 Immune cells and organs

3 Innate immunity

4 Antibodies

5 B-lymphocytes

6 T-lymphocytes and antigen recognition

7 Effector T-lymphocytes

8 Host defence overview

Cell pathology

1 Cell injury

2 Haemodynamic disorders

3 Inflammation

4 The autopsy

5 Cancer

6 Cell pathology case studies

Microbiology

1 Bacterial properties

2 Bacterial diseases

3 Hospital acquired infection and antibiotic resistance

4 Fungal Infection

5 Viral properties

6 Viral disease I

7 Viral disease II

8 Prevention and treatment of viral disease

9 Defence and vaccination against bacteria

58 sessions**Additional teaching or amendments needed, based on current year 1 BMS programme.**

Bold = teaching not given in MCD, but needed

Italic = topic covered in MCD, but depth and breadth need to be checked

**Atomic structure**

**Chemical bonds**

*Molecular structure*

**Bonds & orbitals**

**Chirality**

**Acids & bases**

**Water & H-bonding**

**Chemical reactions**

**Reaction mechanisms**

*Amino acids*

*Sugars*

*Nucleotides*

*Polysaccharides*

*Lipids*

*Protein structure*

*Nucleic acids*

*DNA sequencing*

*Energy & thermodynamics*

*Redox reactions*

*Reaction kinetics*

*Enzyme catalysis*

*Enzyme analysis*

*Enzyme inhibition*

*Cell respiration*

*Glycolysis*

*Krebs cycle*

**Special membranes**

*Membrane transport*

*Mitochondria*

*Chemiosmosis*

**Membrane electrogenesis**

*RNA processing*

*RNA regulation*

*Cell signalling*

*Cell cycle*

*Cell cycle regulation*

*Cytoskeleton*

*Microfilaments*

*Intermediate fibres*

*Mitotic spindle*

*Cell junctions*

**Meiosis**

*Mapping*

41 topics.

Divided into 3 main themes: Chemistry & biochemistry; Enzymes & energetics; Cell biology

Draft timetable for BMS year 1 2012

|  |  |  |  |
| --- | --- | --- | --- |
| Date and venue | Time | Subject | Speaker |
| Week 1  1 Oct |  | Introductory material |  |
| M | AM | 119, MDL2D |  |
|  | PM | 119 |  |
| Tu | AM | Tut rooms, MDLs |  |
|  | PM | Tut rooms,119pm, MDLs |  |
| W | AM | MDLs, Tut rooms |  |
| Th | AM | Tut rooms, MDLs |  |
|  | PM | Tut rooms, 119pm, MDLs |  |
| F | AM | Tut rooms, 119am, MDLs |  |
|  | PM | Tut rooms |  |
|  |  |  |  |
| Week 2  8 Oct |  |  |  |
| M | AM | Tut rooms, 119, MDL2 |  |
|  | PM | 119, MDL2 |  |
| Tu | AM | G16, HH-NS |  |
|  | PM | G16, HH-NS |  |
| W | AM | Comp, MDL2 |  |
| Th CX | 9.00 | **Cells 1:** Cells and organelles | Mike Ferenczi |
|  | 10.00 | **Cells 2:** Infectious agents | Chris Tang |
|  | 10.45 | **BREAK** |  |
|  | 11.15 | **Cells 3:** Cell membranes | Mike Ferenczi |
| F SK | 9.00 | **Metabolism 1:** Introduction to protein structure | James Pease |
|  | 10.00 |  |  |
|  | 2.00 | **Nucleic acids 1:** Nucleic acids and chromosomes | Birgit Leitinger |
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| Week 3  15 Oct |  |  |  |
| M | AM | G16 10-2 |  |
|  | PM | G16 3-5 |  |
| Tu SK | 9.00 | **Cells 4:** Blood and Blood Cells | Mike Emerson |
|  | 10.15 | **Metabolism 2:** Energetics and enzymes | James Pease |
|  | 11.00 | **BREAK** |  |
|  | 11.15 | **Nucleic Acids 2:** DNA replication, the cell cycle and mitosis | Birgit Leitinger |
|  | 2.00 | **Metabolism 3:** Metabolic pathways and ATP production I | James Pease |
|  | 3.00 | **Nucleic acids 3:** Gene organisation & transcription I | Laki Buluwela |
| W | AM | G16 & MDLs |  |
| Th | AM |  |  |
|  | PM | G16 12-5 |  |
| F SK | 9.00 | **Metabolism 4:** Metabolic pathways & ATP production II | James Pease |
|  | 10.00 |  |  |
|  | 2.00 | **Metabolism 5:** Mitochondria and oxidative phosphorylation | James Pease |
|  |  |  |  |
| Week 4  22 Oct |  |  |  |
| M | AM | 119 am |  |
|  | PM | Not much |  |
| Tu CX | 9.00 | **Nucleic Acids 4:** Gene organisation & transcription II | Laki Buluwela |
|  | 10.00 | **Metabolism 6:** Lipids and membranes | Miguel Seabra |
|  | 11.00 | **Break** |  |
|  | 11.15 | **Metabolism 7:** Cholesterol | Miguel Seabra |
| W | AM | Tut rooms |  |
| Th | AM | 119 am until 3pm |  |
|  | PM | Not much |  |
| F SK | 9.00 | **Genetics 1:** Mrs Jones’ first consultation | Andrew Walley |
|  | 9.45 |  |  |
|  | 2.00 | **Nucleic Acids 5:** Protein translation and post translational modification | Tony Magee |

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| Week 5  29 Oct |  |  |  |
| M CX | 9.00 | **Genetics 2:** Mrs Jones (2) – risk of transmission of genetic disease | Alexandra Blakemore |
|  | 10.00 | **Genetics 3:** More stories from the genetics clinic | Andrew Walley |
|  | 10.45 | **BREAK** |  |
|  | 11.15 | **Tissues 1:** Epithelial cells | Peter Clark |
|  | 2.00 | **Metabolism 8:** Membrane trafficking | Tony Magee |
|  | 3.00 | **Genetics 4:** Cancer in families and individuals | Alistair Reid |
| Tu SK | 9.00 | **Nucleic acids 6:** Analysis of nucleic acids | Tony Magee |
|  | 10.00 | **Genetics 5**: Prenatal diagnosis of genetic diseases | Ruwan Wimalasundera |
|  | 10.45 | **Break** |  |
|  | 11.15 | **Tissues 2:** Epithelial tissues | Peter Clark |
| W | AM | G16 |  |
| Th | AM | MDLs, 119 |  |
|  | PM | G16, 119 |  |
| F SK | 9.00 | **Metabolism 9:** Integration of metabolism | Gaby Da Silva |
|  | 10.00 |  |  |
|  | 2.00 | **Immunology 1:** Introduction to immunology | Charles Bangham |
| Week 6  5 Nov |  |  |  |
| M | AM | 119 to 2pm |  |
|  | PM |  |  |
| Tu SK | 9.00 | **Genetics 6:** Complex genetic diseases – can genes make us fat? | Alexandra Blakemore |
|  | 10.00 | **Tissues 3:** Extracellular matrix biology I | Birgit Leitinger |
|  | 11.00 | **Break** |  |
|  | 11.15 | **Genetics 7:** The future of genomic medicine | Jess Buxton |
| W | AM | Tut Rooms |  |
| Th | AM | MDL2D, 119 to 11am |  |
|  | PM | MDL2D, 119 after 12noon |  |
| F SK | 9.00 | **Tissues 4:** Extracellular matrix biology II | Birgit Leitinger |
|  | 10.00 |  |  |
|  | 2.00 | **Immunology 2:** Immune cells and organs | Keith Gould |

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| Week 7  12 Nov |  |  |  |
| M | AM | G16 |  |
| M | PM | G16 |  |
| Tu | AM | G16, Tut rooms |  |
| Tu | PM | G16 |  |
| W | AM | MDL2D, Tut rooms |  |
| Th | AM | G16, MDLs |  |
| Th | PM | G16, MDLs |  |
| F SK | 9.00 | **Tissues 5:** Fluid compartments of the body | Nancy Curtin |
|  | 10.00 |  |  |
|  | 2.00 | **Immunology 3:** Innate immunity | Keith Gould |
|  |  |  |  |
| Week 8  19 Nov |  |  |  |
| M | AM | MDL2A-D |  |
|  | PM | MDL2A-D |  |
| Tu | AM | Tut rooms |  |
|  | PM | G16 |  |
| W SK | 9.00 | **Tissues 6:** Nerve | Nancy Curtin |
|  | 10.00 | **Immunology 4:** Antibodies | Keith Gould |
|  | 10.45 | **Break** |  |
|  | 11.15 | **Tissues 7:** Muscle | Nancy Curtin |
| Th SK | 9.00 | **Tissues 8:**  Signalling between cells I | Sohag Saleh |
|  | 10.00 | **Immunology 5:** B-lymphocytes | Ingrid Muller |
|  | 10.45 | **Break** |  |
|  | 11.15 | **Immunology 6:** T-lymphocytes and antigen recognition | Keith Gould |
| F | AM | G16 10am-2pm |  |
|  | PM |  |  |

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| --- | --- | --- | --- |
| Week 9  26 Nov |  |  |  |
| M | AM | 119 |  |
|  | PM | 119 |  |
| Tu SK | 10.15 | **Immunology 7:** Effector T-lymphocytes | Ingrid Muller |
|  | 11.15 | **Cell pathology 1:** Cell injury | Rob Goldin |
| W SK | 9.00 | **Tissues 9:** Signalling between cells II | Sohag Saleh |
|  | 10.00 | **Cell pathology 2:** Haemodynamic disorders | James Carton |
|  | 10.45 | **Break** |  |
|  | 11.15 | **Microbiology 1:** Bacterial properties | David Holden |
| Th | AM | MDLs |  |
|  | PM | 119 |  |
| F SK | 9.00 | **Microbiology 2:** Bacterial diseases | Chris Tang |
|  | 10.00 |  |  |
|  | 2.00 | **Microbiology 3:** Hospital acquired infection and antibiotic resistance | Chris Tang |
|  |  |  |  |
| Week 10  3 Dec |  |  |  |
| M | AM | MDLs, G16, Tut rooms |  |
|  | PM | G16, Tut rooms |  |
| Tu SK | 9.00 | **Microbiology 4:** Fungal Infection | Elaine Bignell |
|  | AM | Tut rooms |  |
|  | PM | Tut rooms, G16 |  |
| W | AM | MDLs A-C |  |
| Th SK | 9.00 | **Cell Pathology 3:** Inflammation | Mary Thompson |
|  | 10.00 | **Cell Pathology 4:** The autopsy | Mike Osborn |
|  | 10.45 | **Break** |  |
|  | 11.15 | **Microbiology 5:** Viral properties | Geoff Smith |
| F SK | 9.00 | **Cell Pathology 5:** Cancer | Rathi Ramakrishnan |
|  | 10.00 |  |  |
|  | 2.00 | **Microbiology 6:** Viral disease I | Geoff Smith |

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| --- | --- | --- | --- |
| Week 11  10 Dec |  |  |  |
| M | AM | G16, MDLs |  |
| M | PM | G16, MDLs |  |
| Tu SK | 9.00 | **Immunology 8:** Host defence overview | Peter Openshaw |
|  | 10.00 | **Microbiology 7:** Viral disease II | Geoff Smith |
|  | 10.45 | **Break** |  |
|  | 11.15 | **Microbiology 8:** Prevention and treatment of viral disease | Geoff Smith |
|  | 2.00 | **Microbiology 9:** Defence and vaccination against bacteria | Ian Feavers |
|  | 3.00 | **Cell Pathology 6:** Cell pathology case studies | Marjorie Walker |
| W | AM | Tut rooms |  |
| Th | AM | G16, MDLs |  |
| Th | PM | G16, MDLs |  |
| F | AM | G16, MDLs |  |
| F | PM | 119, MDLs |  |