アジア保健学コース

英語授業のためのハンドブック

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九州大学大学院
医学府保健学専攻

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ご挨拶

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九州大学保健学科では“世界に通用する保健学教育と研究”をめざし、開学以来教育の国際化を推し進めてまいりました。教育の国際化は教員の海外研修や外国人教員・研究者の招聘は勿論のこと、学部間の交流協定推進や学部学生の受け入れも行い多大な成果を納めてきました。

保健学科は九州大学の推進する Enhanced Educational Program への参加も継続的に行い、リアルタイムでの国際的情報収集と英語教材の作成を進めており、その成果の一部は既に公開されています。さらに国策である Global 30 に対応して英語を母国語とする教員の配置や外国人のための大学院修士課程における“アジア保健学コース”の開設を通して、アジアを中心とした大学院生の受け入れを進めています。これらの実績を踏まえ、今回、看護・検査・放射の３分野を網羅してこの「アジア保健学コース～英語授業のためのハンドブック」を作成に至っています。

本学科にあっても実際には英語で講義を行った経験もつ教員は少なく、スライドは英語で作成できても長時間にわたる講義を英語で外国人学生等に対して口頭で適切に行うのに困難を伴うのは事実です。本書は上記の現状を踏まえ英語授業のための実践的活用を念頭に編集されています。このハンドブックが皆様の教育現場での一助になれば幸いです。最後に本書作成にご尽力頂いた保健学部門教員各位に感謝致します。

はじめに

医学研究院保健学部門 EEP 実施委員会　委員長　川本利恵子

本ハンドブックは、平成２４年度九州大学教育の質向上支援プログラム(EEP)に採択された「保健学リーダー養成海外 FD プログラム」に基づいて作成されました。EEP プログラムは、これまでの国際交流と教材開発の実績を基盤に保健学教育の国際化と情報化をさらに推進することを目的としており、国際化を推進する教材の開発及び有効な保健学教育方法の開発に取り組んでいます。本ハンドブックはその教材開発の取り組み成果物として刊行しました。

本ハンドブックの内容は、九州大学医学系学府保健学専攻修士課程の国際コース(アジア保健学)の英語での授業のための教材開発に沿っています。海外で短期あるいは長期の研究生活を送った経験を有する教員はおりますが、海外での教育経験まである教員はなかなかいません。そこで、本ハンドブックは英語が母国語ではなく海外での教育方法の経験がない、あるいは少ない教員を対象にしました。

執筆は、保健学部門教員とG30 外国人教員として保健学専攻で英語教育にあたられている Suzy Connor 講師にお願いしました。アメリカ合衆国における看護師としての 10 年以上の経験があります Suzy Connor 講師には、日本人が英語で保健学に関する講義を行う場合のポイントを詳細にまとめていただき、その内容の理解を深めるために日本語の解説も加えました。さらに、有効な英語の講義にするための課題をあげ、看護学、医用量子線科学、検査技術科学におけるキーワードを抽出し、整理しましたので、保健学部門の先生方に活用していただけると幸いです。

今後は、内容をさらに充実させ、部門内だけでなく、他部局、他大学等にも配布させていただき、成果の波及、共有化を計りたいと願っております。

最後にハンドブックの作成にご尽力いただきました保健学部門の先生方に深く感謝いたします。

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Teaching in English
（A Handbook for the College of Health Sciences）

このセクションは、本学教員が英語で講義を行う際に役立つ情報、効果的な教授法やシラバスの作成などに関して提案するものです。

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Introduction

The purpose of this handbook is to help the Japanese professor who will be teaching classes in English as part of the Global 30 project. While many of the professors *speak* excellent English, they may not have *taught* in English. Some may feel a little bit worried about teaching an entire course in English. However, remember that you are all experienced professors at an excellent university. Foreign students are coming to Kyushu University because of the knowledge and expertise of the professors here. Most of the ideas in this handbook are suggestions; they are not commands.

The ideas contained in this handbook do not necessarily reflect the views of the author. They are intended to be of assistance to the staff at Kyushu University.

このハンドブックの目的は、グローバル 30 プロジェクトの一環で日本人教員が英語での授業を実施する場合の一助となることを願って作成されました。英語力のある教員であっても英語で授業を行った経験がなく実際に授業を英語で進行することへの不安を抱いているかもしれませんが、留学生の多くは、九州大学の専門知識に優れた教員のもとで学ぶことを望み留学してきているのです。このハンドブックに書かれている内容は、一つの提案であり絶対ではありません。

Teaching Foreign Students…外国人学生に教える際の注意点

The following points will be helpful in teaching foreign students:

-Hopefully, foreign students have read about Japanese universities. They may know about some things that happen in the Japanese classroom, for example, the fact that many Japanese teachers teach their classes using a lecture format. Still, many things will happen in the Japanese classroom that you may need to explain to foreign students. For example, <shusseki hyo>, or attendance slips, are generally not used in foreign classrooms. The Japanese professor may need to explain such things to foreign students. (Some Japanese students keep a supply of these slips, so it's possible they may get an explanation from other students!)

留学生自身が日本の大学の授業の進め方についてすでに何らかの形で読み知っていると仮定すると、例えば授業は講義形式で行われるなど、それでもなお授業の中で起きる様々な状況を事あるごとに説明しなければならない場面に遭遇することでしょう。海外の大学では存在しない「出席表」も説明を必要とする一つでしょう。

-One thing that might help foreign students is for you to teach some of study strategies that have worked with your own students in the past. The students entering Kyushu University may be high-level students, however there is no reason to think that they are experts in all methods of study.

実際過去に貴方が生徒達に指導した勉強方法（戦略）についてそのいくつかを留学生に教えることは彼らにとって何らかの助けになる事でしょう。九州大学に入学してくる生徒ですので高いレベルの生徒であるでしょうが、すべての勉強方法についてエキスパートであるとはいえないでしょう。

-Most Japanese students tend to be quiet and passive during classes. When the teacher calls on students, they may talk to other students before answering. Western teachers' reactions to this range from amusement to irritation (Anderson, p. 102-3). When the teacher gives assignments, students talk among themselves to make sure they understood correctly. Students from Western countries, on the other hand, often speak more, ask questions, offer their opinions, and even challenge the teacher at times. This can be surprising and maybe even annoying to the Japanese professor. Indeed, some Japanese professors working in America express annoyance at students who ask questions: "And I already covered that!" (Anderson, p. 106.) However, even if the student has done some research into a "typical Japanese lecture class", they may feel cheated out of some learning if they're not allowed to ask questions.

多くの日本人学生は授業中大変静かで受け身です。生徒に発言を求めた場合、生徒は他の生徒と発言の内容を確認し発表することがしばしばあります。この様な事は外国人教員にとって面白く感じるから不快に感じるまで様々です。(Anderson, p.102-3) また、課題を与えた場合は、その内容について生徒同士で確認をしあいます。一方、外国人学生は多く発言し、質問をし、自分の意見を述べます。時には、教員に対し異議を唱えることもあります。この事は日本人教員にとって予期しないことであり面倒なことであると感じるかもしれません。実際アメリカで勤務する日本人教員は質問をする生徒に対し不快感を表します。“そこはすでに説明したところだ！”（授業中にすでに説明をしたにもかかわらずその点についていろいろと質問をする生徒に対し不快感を示す。）しかし、たとえ“典型的な日本の講義形式授業”についての研究を成した生徒であっても授業中に質問することを許されないとしたならば授業の内容をごまかされたように感じることでしょう。

-On the other hand, it is important to note that the idea of vocal, engaged, curious foreign students is not universal. In the West, it is more typical of middle-class students. Minority subcultures do not always behave in this manner. They may have different ways of interacting with their peers and with teachers. Unfortunately, they are not always viewed as "good students" (Anderson, p. 107.) On the other hand, some of the above-mentioned middle-class students may also be very shy and quiet in class. Just as foreign teachers are always warned not to make stereotypes about Japanese students, Japanese teachers should try not to make stereotypes about foreign students.

しかし外国人学生は、主張が強く、積極性のある好奇心旺盛な者ということは全員にあてはまるものではありません。西洋諸国では、中産階級の生徒というのがもっとも一般的です。少数派の下位文化で成長した生徒はまた違った行動、態度をとります。友人同士また教員との交流の仕方も違うものでしょう。残念ながらその行

動は“良い生徒”として見られることはさほどありません。(Anderson, p.107)しかし先に述べた中産階級の生徒の中には、気弱で物静かな者もいます。日本の外国人教員は、日本人学生を固定概念で見てはいけないと頻繁に注意を受けますが同様に日本人の教員も外国人学生に対し固定概念で見ないという努力も必要ではないでしょうか。

This is especially true if the foreign students are from other Asian countries. While it is more likely that the Korean student will behave more like a typical Japanese student than an Australian student, that should definitely not be taken for granted. In fact, it is possible that one of the reasons the student chooses to study at a foreign university is that although they are intelligent, they may not fit in well with their own peers.

このことは特に外国人学生が他のアジアの地域から入学してきている場合に当てはまります。韓国人学生は、オーストラリア人学生に比べてより典型的な日本人のように振る舞うとは言えその事を当然のことであると判断するべきではありません。実際留学の理由として学業に秀でているということのみならず自国の友人達にうまく溶け込めないという場合もあります。

-Foreign students may be surprised when their classmates sleep in class. The Japanese professor may not want to say that it's OK to sleep in class, but it is not considered particularly rude. In many English speaking countries, it is considered very rude for students to sleep in class.

外国人学生は、授業中に生徒が居眠りしていることに対し驚くかもしれません。日本人教員は居眠りに対し良しとしないもののその行為が極めて無礼であるとはみなしていないようです。英語を母国語とする国においては授業中の居眠りは大変無礼な行為とみなされています。

-When thinking about medical education, if students have had any medical training, they may be surprised at some of the differences between Japanese and foreign healthcare systems. For example, in Japan, when Japanese doctor gives the patient iron for anemia (貧血), the patient instructions usually say to take after meals. In the United States, iron is given on an empty stomach with a vitamin C-rich juice such as orange juice. If the patient is having stomach symptoms, *then* iron may be given after meals.

医学教育について考えてみますと、学生が医学教育を受けたことがあれば日本と諸外国の医療制度の違いに驚くことでしょう。例えば、日本では貧血に対し医者は鉄剤を処方し、処方箋には食後の服用とあります。アメリカでは、鉄剤の処方では空腹時ビタミンC含有量の多いオレンジジュースなどと一緒に摂るよう指導されます。胃に何らかの症状がみとめられる場合にのみ食後に服用することとなります。

-When speaking in English, is not necessary to have a "perfect accent". Anyone wishing to have a "perfect" accent would have to decide which accent: American, Canadian, Australian, British, etc. Many varieties of English sound a little different mainly because of the vowel (a,e,i,o,u) pronunciation. With a few exceptions (such as the "r") consonant (b,c,d,f,g, etc.) pronunciation is fairly standard. Indeed, many articles on pronunciation, such as *Showing Pronunciation in EFL Teaching* by Thomas R Hofmann, focus on vowel pronunciation. For Japanese people, consonant pronunciation is sometimes a problem. Even high-level students often have problems with the b/v, shi/si, l/r, th, f/h, for example. Troublesome vowel sounds include the short "a": mat hat; er/ir: heard, girl, world; ay/ah: ankle/uncle . The shi/si is a special problem because many words in English use the "s short i" sound, for example sit, city. Those two very common words are a particular problem for Japanese people because if not pronounced properly, the words come out as swear words!

英語で話す場合完璧なアクセントは必要ではありません。完璧なアクセントを習得したいと願った場合、米語、加語、豪語、英語、その他の英語圏の英語の中からまずどのアクセントを選ぶかも問題になります。
先に上げた様々な英語は母音(a,e,i,o,u)の発音の違いによって少しだけ違って聞こえます。子音(b,c,d,f,g, 等)の発音に関してはいくつかの例外(r など)を除けばほぼ同じであります。実際に多くの発音に関する記事、例えば Thomas R Hofmann 氏の著書 Showing Pronunciation in EFL Teaching などでは、母音の発音に焦点を置いています。日本人にとって子音の発音が問題となることもしばしばあります。英語力の高い学生であっても例えば b/v, shi/si, l/r, th, f/h などの発音に問題があります。厄介な母音の発音には mat, hat などの短い a の音、heard , girl, world などの er/ir の音、また ankle/uncle などの ay/ah の音も含まれます。特に shi/si の音、例え

ば sit や city の様に“s 短い i”の音は英語の語彙に多く含まれるため特に問題となります。これらの二つの単語はよく使われる単語でありその発音は日本人特有の問題です。もしこれらの二つの単語をきちんと発音出来なかった場合は人をののしる言葉に変わってしまいます。

-When you first started teaching, you probably practiced your first few lectures until you felt you could deliver them smoothly. When preparing for a presentation at a conference, even your native Japanese language, common advice is to practice your presentation in advance. If you are teaching in English for the first time, it may be helpful to practice a lecture or two to get comfortable teaching in English.

授業を初めて行う際には、問題なく初回の授業が進むよう何度か練習をされることでしょう。学会で日本語による発表をおこなう場合であっても発表の前に練習をすることは特別なことではありません。初めての英語での授業であれば 1、2 度授業の流れを練習し英語で授業を行うことに慣れることも必要でしょう。

-Avoid buzzwords /slang unless you know that it is understood by many cultures. Each country has its own idioms that may not be known to others. Even within one country, some people don't understand expressions that people from another area of the country use. This is especially true in a large, spread out country such as the United States.

流行りの言葉や隠語などは、その言葉が多くの国で使用され誰もが知っている言葉であると言うことが不確かならば使用は控えた方が良いでしょう。それぞれの国ではそれぞれ特有の言葉があり他の地域の人にはわからない場合があります。アメリカなどの大国においては、国内であっても地域間で言語の違い、表現方法の違いがあります。

-Even if your English is excellent please remember that Katakana loan words (外来語) are *Japanese* and they usually can't be used in English the way they are used in Japanese (many aren't even from English!) An example is the term "baby car". Most English speakers do not use that to describe a "stroller". It doesn't make sense until it is explained.

たとえ貴方の英語力が大変高い場合であってもカタカナ表記の外来語は日本語であってそのほとんどが英語として使用することが出来ないものです。（中には英語のようであっても全く英語からきていない外来語もあります。）例えば、“baby car”（ベビーカー）は、英語を母国語とするほとんどの者にとって実際のベビーカーの意味を持ちませんので説明が必要となります。実際英語では“stroller”といいます。

Teaching Styles…英語での講義の仕方 –受動型と能動型–

When teaching a class in English, is perfectly acceptable to do everything you do normally, just using English-language as the medium of instruction. Some Japanese professors have said that they are interested in changing their classroom style to use a more active learning approach rather than a pure lecture style. There are pros and cons to each approach. The following sections will discuss both the lecture approach and the active learning approach.

授業は、通常日本語で行う方法で進めて全く構いません。そこに英語を一つの教授法として取り入れるだけなのです。先生方の中には、授業自体を講義形式からより参加型の授業形式に変更することを検討されているかもしれませんが、この点に関しては一長一短であります。以下に示しますのは講義形式と能動的な参加型形式のそれぞれについて検討しています。

The Lecture Approach…講義へのアプローチ

The lecture approach allows the professor to teach a large amount of information in a fairly short time. In classes such as biology, physics, and physiology, many concepts, terms and formulas must be learned. It is the responsibility of the student to learn this material regardless of how is presented (even if they choose to sleep in class!). It is also generally easier to write examinations when the material being tested contains large amounts of facts and figures. Some think the lecture format isn't interesting, but a well-prepared lecture can be very exciting.

講義では、短い時間で膨大な情報を伝えなければなりません。生物学、物理学、生理学、概念や用語、公式など把握しておかなければなりません。生徒は、どのような形式で講義資料が示されても、たとえ居眠りをしようとしても、その内容を把握することは生徒としての責任です。資料に事実や数字が多く載っていれば一般的には試験を作成することはより簡単になるでしょう。講義形式はつまらないと言う人もいますが、念入りに計画された講義型の授業は大変面白いものです。

One problem with the lecture approach is that if the instructor is not careful, lectures can become dull and boring. The bored student tends to fall sleep rather easily. A way of describing a traditional lecture is that "Information is passed from the notes of the lecturer to the notes of the student without passing through the minds of either" (Michaelsen et al., pg 76.) It is also difficult for the brain to remember large amounts material in a short period of time. (Silberman, pg 4)

講義形式での問題点を一つあげるならば指導者が注意深く講義を行わなかった場合に講義はつまらないものとなります。退屈な生徒はすぐに居眠りをしてしまう傾向があります。従来の講義形式について次のような事が言われています。“講義内容は、講義する側のノートから生徒のノートへ受け渡される。誰も頭を使って考えていない。”(Michaelsen et al., pg 76.) また、短い時間に膨大な量の情報を記憶する事は脳にとっても容易なことではありません。

Several studies have supported this:

以下の内容についていくつかの研究で支持されています。

-One study shows that the students in lecture-based college classrooms do not pay attention to the lecture about 40% of the time (Pollio, 1984 p. 11)
-Students remember 70% in the 1st 10 minutes of a lecture, however they remember only 20% of the last 10 minutes (McKeachie, 1986, p.72)
-Students who took a lecture-based introductory psychology course knew only 8% more information than a control group who had never taken the course. (Rickard et al, 1988, p. 85-90)

・研究によると、大学での講義形式クラスでは生徒はその講義のおよそ 40%の時間は集中していない。(Pollio, 1984 p.11)
・生徒は、講義開始から 10 分間の内容の 70%を記憶しているが終了間際 10 分の内容は 20%しか記憶していない。(McKeachie, 1986, p.72)

・講義形式の心理学コースを受講した生徒は、講義に参加した事のない対照群よりわずか 8%多くの情報を理解しているに留まった。(Rickard et al,1988,p. 85-90)

On the other hand, it is often easier to take notes in a lecture than, for example, in a group discussion (Bauers, 2009). Of course, students need good note-taking skills in order to effectively review the material later. One possible strategy is to give the students a lecture outline.

一方でグループディスカッションなどに比べるとノートの取りやすさは講義形式の方が有利であります。(Bauers, 2009) 資料を効果的に復習できるようノートの取り方についても学ぶ必要があります。講義概要を渡すことも一つの手かもしれません。

It is important to remember that most foreign students have had lecture courses. For example, in many science courses, in a one-week period, there are several lectures with hundreds of students. The students in the large lecture classes are also put into smaller laboratory groups. Students may not always *enjoy* the lectures, but they're *familiar* with this type of teaching. Also, there is the possibility that the foreign student may want to come to Japan *because* of Japanese-style lectures. They may have been in classes with poorly taught active learning activities (sadly, this is not uncommon…) and felt they didn't learn anything.

ここで重要な点はほとんどの外国人学生は講義形式の授業を受けています。例えば、多くの科学のコースでは、1 週間の期間内でいくつかの講義に何百人もの生徒参加しその生徒達はより小さなグループに分かれてさらにいくつかの実験室に散らばります。学生の多くは授業を“楽しんで”はいないかもしれませんが、このような形式の授業には、“慣れています”。また外国人学生が日本の授業に参加したい理由に講義形式の授業を希望している可能性もあります。能動的な授業の活動で十分に教育されなかったため（残念ながらこれは珍しい事ではありません。）能動的な授業形式では何も学べなかったと感じているのかもしれません。

In addition, part of the point of a lecture is to inform students of what they need to know. Instructors don't necessarily expect that they retain everything from the lecture without studying. Regardless of the method of instruction, most students to have to spend quite a bit of time studying in order to learn the material. How they learn it is up to them.

加えて授業のポイントとなる点の一つとして生徒に何を知るべきかを伝えることです。指導者は生徒が学習せずに授業内容のすべてを覚えることができるなど必ずしも期待するものではありません。教授方法にかかわらず多くの生徒は講義資料を理解しようと思えばかなりの時間を費やさなければならないでしょう。どのように学ぶかは生徒次第です。

For those who plan to continue with the lecture approach, there is a very simple, but effective technique to improve learning. Actually, it counts as an active learning strategy, but it fits well into a lecture. Two or three times during a lecture, pause for a few minutes and have students compare their notes. This can be a way of "filling in the gaps", or a way of clarifying your lecture material. If students have different information, they can ask to get the "correct" information. Ruhl, K. L., Hughes, C.A., & Schloss, found that by pausing for 2 minutes three times during a lecture to edit their notes and again at the end of a lecture for a recall exercise, students significantly outperformed students who had the same lectures but without the pauses (Ruhl, K. L., Hughes, C.A., & Schloss 1987.)

講義形式で授業を進めていこうと考えているならば、習熟度を高める簡単で効果的なテクニックがあります。実際にはその方法はアクティブラーニングで用いるのですが、講義形式の授業でも効果的です。授業の中で 2, 3 回授業を中断し数分間生徒同士でそれぞれのノートを見比べさせます。この活動によってそれぞれ足りない点を補うことが出来るだけでなく講義資料の内容を生徒が把握できているかどうかを確認することができます。生徒がノートを見比べ、ノートにそれぞれ異なった情報が書かれてあった場合は、正しい内容を教員に確認することができます。Ruhl, K. L., Hughes, C.A., & Schloss によると授業中にノートに補足や修正をするための時間を 2 分間、3 回そして、さらに授業終了間際に授業全体の内容を振り返る時間を設けることでその生徒達は、そのような時間が与えられなかった生徒よりも明らかに優秀でありました。

Some strategies for better lecturing from Hufford & Holman of Madigan Army Medical Center:

ここでは、Madigan Army Medical Center のHufford & Holman によるより良い講義のやり方についていくつかご紹介します。

Introduce your topic with something to grab the students' attention, such as a quote, question, survey, provocative statement, etc

導入：授業テーマについて説明する際にはまずは生徒を引き付ける何かが必要です。何かの引用や質問、調査、積極的な発言などが必要となるでしょう。

Tone of voice should be natural, conversational, varied and enthusiastic.
"*If you sound like you don't care, they won't either!*" (pg 6)

発声：自然であまり堅苦しくなく、緩急があり熱心さが伝わる感じが良いでしょう。
"生徒の事を気にかけていないような話し方であれば、生徒も同様に何も気にかけないでしょう"(pg 6)

Use diaphragmatic breathing and project your voice.

胸式呼吸で発声を良くしましょう。

Pointers draw attention to a point but exaggerate tremors, so use 2 hands or support one hand on the podium.

ポインター：要点に対して注目させることはできますが同時に揺れを強調させてしまいます。ポインターを使用する際には、両手を使うか片手は演題を支えて使用するのが良いでしょう。

Don't let it wander around your slide or point it at anyone. (as this is for Army personnel, their advice is to think of it as a firearm!)

ポインターをスライド上であちこちに向けたり、また人に向けることがないよう気をつけるべきです。
（軍隊であれば、ポインターが銃口であると想像して下さい。）

Gestures help emphasize points.

ジェスチャー：ジェスチャーは、要点を強調する助けとなります。

In a large classroom, you would need to use larger gestures than in a small group. Even then, it is only necessary to slightly exaggerate gestures that emphasize a point. (Hufford & Holman pg. 6,7,8.)

大人数のクラスであれば、少人数のクラスよりも大きめのジェスチャーが必要でしょう。とは言え、要点の強調には少しだけ大げさにすれば良いだけのことです。(Hufford & Holman pg. 6,7,8.)

Note: Japanese speakers tend use minimal gestures, if at all. So, when doing presentations in English, they worry about the "right" gesture with the "right" word. (This has been the experience of the author.) This is not necessary. If you feel that you want to add them, use gestures that show size, shape, movement (increase, decrease), trends, location, how to do something, etc. They help students in understanding your message as well as keeping their attention.

注意：日本人は、まったくジェスチャーを使わないあるいは最低限のジェスチャーしか使わないので、英語での発表ではどの言葉でどのようなジェスチャーをするべきか不安を覚える場合があります。（これは、著者の経験談です。）しかし心配は無用です。大きさや形、上昇、下降などの推移、傾向、場所、使用方法など貴方がジェスチャーを添えたいと思えばその様にすればよいでしょう。ジェスチャーによって貴方の伝えたい内容が伝わりやすくなりますし、また生徒の注意を引くことも出来ます。

Silberman lists short, easy-to-read ways to improve lectures:

Silberman 氏は、授業をよりよく行う為の端的にまとめた方法を挙げています。

10 Suggestions to Improve a Lecture（講義をよくする 10 のヒント）

Building interest　（興味をおこさせる）

1. **Lead-off story or interesting visual**: Provide a relevant anecdote, fictional story, cartoon, or graphic that captures the students' attention to what you are about to teach.
2. **Initial case problem**: Present a problem around which the lecture will be structured.
3. **Test question**: Ask students a question (even if they have little prior knowledge) so they will be motivated to listen to your lecture for the answer.

Maximizing understanding and retention　（理解と記憶を最大に）

4. **Headlines**: reduce the major points in the lecture to keywords that act as visual subheadings or memory aids.
5. **Examples and analogies**: Provide real-life illustrations of the ideas in the lecture and, if possible, create a comparison between your material and the knowledge and experience students already have.
6. **Visual backup**: Use flip charts, transparencies, brief handouts, and demonstrations that enable students to see as well as hear what you are saying.

Involving students during the lecture…（生徒を授業へ巻き込みましょう）

7. **Spot challenges**: Interrupt the lecture periodically and challenge students to give examples of the concepts presented so far or to answers spot quiz questions
8. **Illuminating exercises:** Throughout the presentation, intersperse brief activities that illuminate the points you are making.

Reinforcing the lecture…（講義を強化するために）

9. **Application problem**: Pose a problem or question for students to solve based on the information given in the lecture.
10. **Student review**: Ask students to review the contents of the lecture with each other, or give them a self-scoring review test.

(Silberman, pg 19-21)

講義を良くする１０のヒント

興味をおこさせる

１．最初のつかみ、視覚に訴えるインパクトのあるもの：授業でテーマに沿った逸話、実際の話、漫画や動画、図や絵など生徒の興味を引くものを準備します。

２．授業開始時に問題を提起する：授業の内容に関連する問題を始めに提起する。

３．試しの質問：生徒が授業内容の予備知識がほとんどなくても質問をします。そうすることで答えを出すために講義をより熱心に聞くでしょう。

理解と記憶を最大にするために

４．見出し：授業の中の重要なポイントをキーワードとして残します。そうすることで視覚的な副題として機能しまた記憶しやすくなるでしょう。

５．例示と類似：授業の中の見解を現実的な実例を使って示しましょう。貴方が示した資料と生徒の持ち合わせている知識と経験を比較させましょう。

６．視覚的バックアップ：フリップチャート、スライド、簡単なプリントや実演など貴方が述べている内容を目で見て耳で聴くことが出来るようにしましょう。

生徒を授業へ巻き込みましょう

７．意欲をわかせる場面作り：授業中に何度か授業を中断しその都度授業内容の理解を表す例えを出させたり、その場の内容にふさわしい質問を出すなどして生徒の習熟度を確認しましょう。

８．ポイントを明確にする為の練習問題：プレゼンテーションの間にポイントとなる箇所を明確にするために簡単な問題などを行いましょう。

講義を強化するために

９．適用問題：問題や質問を生徒に投げかけ授業中に与えた情報に基づいてその問題を解かせましょう。

１０．生徒同士での復習：生徒同士で授業内容の復習をさせたり、自己採点の復習テストをさせましょう。

Active Learning…アクティブラーニング能動的学習

Active learning (AL) is a way to get the students to participate in the lesson via discussion, projects & tasks designed to help students master material. They are less likely to fall asleep if their classmates need their information and opinions. The brain processes information more efficiently and retention is improved. Students tend to enjoy such classes more than lecture classes. There are many ideas of what AL actually is. It can be as simple as a short pause while students consolidate their notes, or it can be as elaborate as group projects and students teaching each other. The key is that students need to be doing something more than simply writing down with the instructor says. (Bonwell and Eison, 1991)

アクティブラーニングとは、授業の資料を理解する助けとなるよう組まれた議論、プロジェクト、課題などを通して生徒を授業に参加させる方法です。生徒同士がお互いの情報や意見を必要とすれば授業中の居眠りも少なくなるでしょう。脳はより効率的に情報を処理しますし、記憶力もより向上します。生徒達もこのような授業を講義形式の授業より好む傾向があります。能動的学習が実際どのようなものなのかについては様々な考え方があります。生徒がノートを整理している間のちょっとした隙間の時間かもしれません、あるいはグループプロジェクトの様に複雑なもので生徒同士が教え合うものかもしれません。生徒は、指導者が行っていることをただ書きとめるだけではなくそれ以上の何かをするということが重要です。

There are some limitations. It can be difficult to plan effective activities. What works in one class may not work in another. A lot of time is needed to explain different activities. Even after a careful explanation, some students will not understand what they have to do. Sometimes activities, even when successful, can become quite noisy and full of chaos; this can be a little uncomfortable for the Japanese professor who is used to lecturing to a mostly silent audience.

教室内での活動では制約を余儀なくされる場面があります。効率的な学習活動を計画する事は時に難しいこともあります。同じことをやってうまく行くクラスもあれば、そうでもないクラスもあります。様々な学習活動を説明するために多くの時間を費やす必要があります。たとえ丁寧に説明したとしても何をすべきかを理解出来ない生徒も中にはいます。成功例の学習活動の中でもその活動自体が騒がしいものとなったり、収拾がつかなくなることもあります。日頃、講義型の静かな聴衆を前にしての授業形式に慣れている日本人教員にとっては少し居心地の悪い状況かもしれません。

Also, students can be quite disruptive in these kinds of classes. There's an expression in English, "There's one in every crowd." It is almost guaranteed that there will be one student who is very disruptive to the process. This student will try to do all the talking during any discussion, argue with everyone, and behave rudely to other people, including the teacher. Again, this can be a little unsettling, regardless of where you're from.

また、生徒にとってもこの様な形式の授業では秩序が乱れる可能性もあります。英語の表現で“どんな群れにも必ず一人はいる”（集団の中に必ず一人は厄介者がいるという表現）必ずと言っていいほど何かを行う過程において秩序を乱す生徒が一人います。この生徒は、議論の場面では自分だけが発言しようとしますし見栄なく反論をします。他の生徒だけでなく教員に対しても失礼な態度をとります。この事態は人種に係わらず穏やかな事ではありません。

There is one potential problem with using only AL. Silberman recommends a "pared down curriculum" rather than trying to cover "everything". (pg. 7) In other words, teach less material. In the medical field, many students must pass a licensing exam after completing their studies. In these cases, is not possible to eliminate *any* part of the curriculum that may be covered on the licensing exam. In addition to covering everything that would be required for licensing exam, there is also information that must be learned to use in the students' practical experiences, such as specific equipment used in specific hospitals. This is one of the reasons that the lecture format is still extensively used in the various medical fields.

能動的学習のみを使って授業を行うにあたって一つ問題になりうる事があります。Silberrman 氏は、“全て”を網羅しようとせず“カリキュラムを絞る”事を薦めています(pg.7)。言い換えるならば、少ない教材で教えよ。と言うことです。しかしながら、医療分野において修学後生徒は国家試験に合格しなければなりません。

その為試験に出題される部分のカリキュラムを除外する事はできません。加えて、国家試験に出題されるであろう問題を網羅しようと思えば実習の経験を通して使用する用語、例えば特定の病院で用いられる具体的な機具の名称なども学ぶ必要があるでしょう。様々な医療分野の授業で講義型がもっとも多く使われているのには、このような理由もその一要因であります。

For those who want to use more AL in their classes than the 2-minute pause technique, another possibility is to lecture for most of the lesson and then do a short group activity at the end of the lesson. The necessary content is taught, there is less pressure on the teacher to completely change his or her style, and the student still have an opportunity to be engaged in the learning process.

皆さんの中で２分間の中断方式ではなく能動的学習を授業でもっと行いたいと言うのであれば、大体の授業を講義形式で行い授業の最後にグループ活動を行うというやり方もあります。必要な授業の内容はすでに講義形式で教えていますので教える側としては今までの授業スタイルを変えることへのプレッシャーからはいくらか解放されますし、生徒は講義形式と違って学びの過程に参加する機会が与えられます。

If decreasing class content is not possible or practical, a way to add some AL into the curriculum would be to provide AL strategies as homework. This would help ensure that students are actively using their minds when studying instead of simply trying to memorize everything. For example, students can write out questions and answers to use in the next class. Another possibility would be to create a case study.

授業内容を減らすことが可能でない場合また実際的でない場合、カリキュラムに能動的学習の要素を加える方法としては、能動的学習の方策を宿題にするということもできます。この方法では単に暗記をしようとするのではなく生徒が学習する上で積極的に思考する事を確実に助ける働きをします。例えば、次回の授業で聞く質問や答えなどを書き出すなどもよいでしょう。また、ケーススタディーを考えてくると言うのも良いでしょう。

《効果的な能動型教授法のためのツール》

Personal Response Systems　個別応答システム
An AL technique that doesn't require much class time is using some kind of personal response system. They vary in technical difficulty, but all promote student interaction.

クラスの時間をあまり必要としない能動的学習方法として個別応答システムの使用があります。技術的な難しさの差はありますが能動的なやり取りを促すことには間違いありません。

-Low tech can be as simple as having students raise their hands in response to a question. One student from a group can raise a hand to communicate the group's response.

・質問に答える為に手をあげさせると言うこともまたローテクなやり方としてあります。グループの答えとして代表で一人が挙手をするというやり方もあるでしょう。

-A simple "device" can be made with cardboard, then laminated, or with plastic. Students show their response to the instructor.

・シンプルな厚紙をラミネート加工した道具を作ることもよいでしょう。生徒は指導者に道具を通してそれぞれの答えを示すことが出来ます。

Some examples:

To make it easier to count, make the backgrounds for each letter a different color.

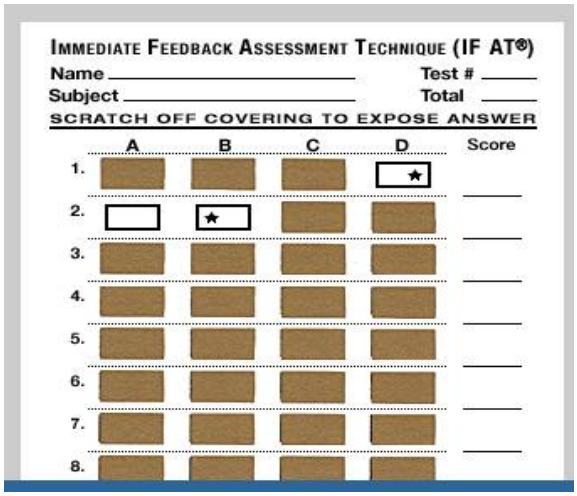
よりわかりやすくするためにそれぞれのアルファベットの背景の色を変えるとよいでしょう。

Interwrite Personal Response Systems（PRS)
Some departments of Kyushu University have electronic Interwrite +PRS. They allow many students to answer a question at the same time. Then the system can graph the total responses. Everyone can see how the class as a whole answers a specific question. This system does have a learning curve in learning how to use the system. A website is:
http://www.einstruction.eu/products/products/index.php?id=15

個別入力応答装置（ＰＲＳ）
九州大学のいくつかの学部では電子入力個別応答装置が備わっています。この装置で多くの生徒が一緒に回答することが出来ます。装置は回答の集計を行いグラフ化してみることもできます。特定の質問に対してクラス全体でどのような回答がなされたかをみることも出来るのです。こちらのシステムには操作を簡単に習得できるようになっています。ウェブサイトのご紹介：
http://www.einstruction.eu/products/products/index.php?id=15

The Immediate Feedback Assessment Technique by Epstein Educational Enterprises uses scratch cards. Students can see if they scratched the right answer by the star on the correct response. A way to use them is to award maximum points for getting the right answer on the first try, and fewer points for each successive try. They are useful in individual & group work. The website is: http://www.epsteineducation.com/home/

エプステイン教育事業による即時応答評価技術ではスクラッチカードを使用します。生徒は、正しく回答出来た場合に★のマークでわかります。使用方法としては最初の解答で正しく答えられた場合には最大のポイントを付与しますその後はポイントを減らしていく形となります。これらは、個人でもグループでも使いやすいものです。ウェブサイトのご紹介：http://www.epsteineducation.com/home/



Some simple ways to use them
簡単な使用方法
・平易な問題：2 種類のバクテリア（例：サルモネラ菌とブトウ球菌）を示し、どちらがサルモネラ菌でしょう？
・より複雑な問題：２つのバクテリア菌を示し、より症状の重い患者はどちらになるでしょう？
・生徒に問題を提起します。治療可能な 4 つの方法をボードに示します。どの治療が最も適した治療でしょう。

-Easy: Show 2 bacteria (ex., Salmonella & Staphylococcus.) Which one is salmonella?
-More advanced: Show 2 bacteria. Which patient is sicker?
-Give the students a problem. Put 4 possible treatment options on the board. Which is the best option?

・平易な問題：2 種類のバクテリア（例：サルモネラ菌とブトウ球菌）を示し、どちらがサルモネラ菌でしょう？
・より複雑な問題：２つのバクテリア菌を示し、より症状の重い患者はどちらになるでしょう？
・生徒に問題を提起します。治療可能な 4 つの方法をボードに示します。どの治療が最も適した治療でしょう。

Problems can be as simple or complex as needed.

問題は、必要に応じてシンプルなものから複雑なものにできるでしょう。

Class Discussions　クラスでの議論

Class Discussions help reinforce text and lecture material, the sharing of new ideas, and promote teamwork. They should be guided, as free discussions tend to easily get off track. They work best in small to medium-sized classes. The class discussion format recognizes that students have past, important experiences to share. When students from different cultures with different ways of thinking get together, maybe they can generate many new ideas. If the class small, the whole class can have a discussion together. A larger class can be broken up into smaller sub-groups, then everyone comes back together to share their ideas with the class.

クラスでの議論は、テキストや授業の資料を補強する手助けとなるでしょうし、新しい考えを共有でき、チームワークを促進させます。生徒だけによる議論は、脱線しやすい為教員によって進められるべきです。クラスは、少人数から中くらいの規模のクラスに向いています。議論形式では、生徒が共有できる過去の貴重な経験を持っていることに気づかされます。様々な文化背景を持った、異なる考え方の生徒が一緒になる場合多くの新しい考えを生み出すことができるでしょう。もし少ない人数のクラスの場合は、クラス全体で議論をすることも可能でしょう。人数の多いクラスでは、一度小グループを作りその後全体で意見を共有するという形もよいでしょう。

Again, Silberman lists short, easy-to-read ways to facilitate discussions, along with examples from a discussion on speech that includes/excludes others:

Silberman 氏は、短く読みやすい、議論を進めやすくするためのリストを他の者を排斥する/しない話し方ついての議論からの例題とともに作成しています。

1. **Paraphrase** what someone has said so that the student feels understood and the other students can hear a concise summary of what's been said at greater length:
So, what you're saying is that you have to be very careful about the words you use because
a particular person might be offended by them.

2. **Check** your understanding against the words of a student or ask the student to clarify what he or she is saying:
Are you saying that this political correctness has gone too far? I'm not sure that I understand
exactly what you meant. Could you please run it by us again?

3. **Compliment** an interesting or insightful comments:
That's a good point. I'm glad that you brought that to our attention.

4. **Elaborate** on a student's contribution to the discussion with examples, or suggest a new way to view the problem:
Your comments provided interesting point from the minority prospective. We could also consider how the majority would views the same situation.

5. **Energize** a discussion by quickening the pase, using humor, or, if necessary, prodding the group for more contributions.
Oh my, we have lots of quiet people in this class! Here's a challenge for you. For the next two minutes, let's see how many words you can think of that are no longer politically acceptable.

6. **Disagree** (gently) with a student's comments to stimulate further discussion.
I can see where you are coming from, but I'm not sure that what you are describing is always the case. Has anyone else had an experience that is different than Jim's?

7. **Mediate** differences of opinion between students, and relieve any tensions that may be brewing.

I think that Susan and Mary are not really disagree with each other but are just bringing out two different sides of this issue.

8. **Pull together** ideas, showing their relationship to each other.
As you can see from Dan's and Jean's comments, the words we use can offend people. Both of them have given us an example of how they feel excluded by gender-bound words.

9. **Change** the group process by altering the method for obtaining participation or moving the group to a stage of evaluating ideas that have been placed before the group.
Let's break into smaller groups and see if you can come up with some criteria for establishing gender-sensitive word usage.

10. **Summarize** (and record, if desired) the major views of the group.
I have noted three major ideas that have come from the group's discussion as to when words are harmful: (1) They exclude some people. (2) They insult some people. (3) They are determined only by the majority culture.

(Silberman, pg. 24-26)

１．言い換える　誰かが述べた内容を言い換えて話す。そうすることで生徒は自分の述べた内容が理解されたと感じ、その他の生徒は長く語られた内容を要約された形で聞くことが出来ます。
…要するに君が何を言いたいかと言うと人が何かを話すときには言葉に注意しなければならない。相手によってはその言葉で気分を害する場合もある。と言うことですね。

２．確認する　生徒の言葉に対し反論するまたは、生徒が述べた内容を明らかにする質問をし、貴方の理解が正しいのかを確認します。
…これは差別用語の行きすぎた擁護だといいたいのかい？君の言いたいことを正確に理解しているか定かではないのでもう一度はじめから説明してくれないか。

３．褒め言葉　興味深い点や鋭いコメントに対して褒めましょう。
…良い点に気付きましたね。その点を持ち出してくれてありがとう。

４．具体的に　例を出しながらまたは問題点を違う角度から見るような提案したり、生徒の議論への貢献について詳しく説明する。
…君は少数派の展望として興味深い意見を述べてくれました。同じ状況の中で多数派はどう見るだろうか。

５．活気づける　ユーモアを交えながら議論を掻き立てましょう。必要であればグループに対しさらなる参加を促しましょう。
…あぁこのクラスにはおとなしい人ばかりいるようですね！ここで皆さんに挑戦してほしいことがあります。これから 2 分間の間にいくつくらい差別的な言葉を出せるかやってみましょう。

６．反論　生徒の意見に対して反論し（優しく）さらなる議論を促す。
…君のその考えもわかるが、必ずしもそうであるとは考えにくい。この中でジムさんとは違う経験をした人はいませんか。

７．仲裁　生徒の間に起きた意見の違いを仲裁し、緊張を解きほぐすようにします。
…スーザンさんとメアリーさんの意見は対立しているのではなく単に問題点を異なる 2 つの方向から見ているにすぎません。

８．意見をまとめる　それぞれの意見の関係性を示す。
…ダンさんとジーンさんの意見からわかる通り私達が話す言葉によって人々の気分を害する事があります。性に関する言葉によってどのように人々が排除された気分になるのかについての例を二人は出してくれました。

９．変更する　議論への参加方法を変えたりグループになる前に考えた内容についてグループ内で

評価したり、グループを作る過程やグループ内の活動を変えてみましょう。
…さらに小さいグループを作ってジェンダーに配慮した単語の用法についていくつか基準を思いつくことが出来るかやってみましょう。

１０．意見の集約　グループの主要な意見を集約する。（必要であれば記録をとる）
…グループディスカッションにおいて言葉が人に悪影響を及ぼす 3 つの主要な見解を述べました。
１）一部の人を除外する。２）一部の人を侮辱する。３）メジャーな文化によってのみ決定される。

（Siberman, pg. 24-26）

Mel Silberman's book, Active learning: 101 strategies to teach any subject has been cited in this handbook frequently as it is written in a to-the-point style for busy teachers who need more ideas. The following is another short, easy-to-read list of AL ideas:

Mel Siberman 氏の著書、能動的学習：科目を選ばない１０１通りの方法は、より多くのアイディアが必要な忙しい教員の為に要点を押さえた書き方で書かれておりこのハンドブックの随所に載っています。以下に挙げたものもまた端的にわかりやすくまとめた能動的学習方法のリストです。

Methods to Get Participation at Any Time　いつでも参加させる方法

- **Open discussion**: Ask a question and open it up to the entire group without any further structuring. The straightforward quality of open discussion is appealing. If you are worried that the discussion might be too lengthy, say beforehand, "I'd like to ask four or five students to share..."To encourage students to raise their hands, ask "How many of you have a response to my question?" Then, call on a student with his or her hand raised.

・**オープンディスカッション**：構成などは気にせず全グループにオープンクエスチョン（自由回答式の質問）をする。率直な開かれた議論は、興味をそそります。もし議論が長々となるようで不安を覚えるのであれば議論を開始する前に“4、5 人の意見を聞きたいのだが・・・”と述べるとよいでしょう。生徒が挙手できるよう“この中でどのくらいの人が私の質問に答えられるだろうか？”と投げかけ、手をあげた生徒に発言を求めましょう。

- **Response cards**: Pass out index cards and request anonymous answers to your questions. Have the index cards passed around the group or otherwise distributed. Use response cards to save time or to provide anonymity for personally threatening self-disclosures. The need to state your answer concisely on a card is another advantage.

・**レスポンスカード**：カードを配りそのカードに質問の答えを無記名で記入してもらいます。そのカードをグループ内で回すか配ります。レスポンスカードを使用することで時間の短縮も出来ますし自己開示を恐れている者へ匿名性を保てます。もう一つの利点は回答を簡潔に書く必要性があります。

- **Group Discussion**: Break students into subgroups of three or more to share (and record) information. Use subgroup discussion when you have sufficient time to process questions and issues. This is one of the key methods for obtaining everyone's participation.

・**グループディスカッション**：生徒を 3 グループ以上のサブグループに分け情報の共有（または、記録）をします。質問や問題点を処理する十分な時間があればサブグループでの議論をしましょう。この方法は全員を参加させる一つのかなめとなる方法です。

- **Learning partners**: Have students work on tasks or discuss key questions with the student seated next to them. Use learning partners when you want to involve everybody but don't have enough time for small-group discussion. A pair is a good group configuration for developing a supportive relationship and/or for working on complex activities that would not lend themselves to large-group configurations.

・**学習パートナー**：作業やカギとなる質問では、隣に座る者同士で取り組ませます。生徒全員を参加させたいが小グループで議論をする時間がない場合などは学習パートナーの方法が良いでしょう。二人組と言うのは互いに支え合える関係を築ける良い構成であり大人数での構成グループでは出来ない複雑な活動に取り組むにも良い構成です。

- **Panels**: Invite a small number of students to present their views in front of the entire class. An informal panel can be created by asking for the views of a designated number of students who remain in their seats. Use panels when time permits to have a focused serious response to your questions. Rotate panelists to increase participation.

・**パネリスト**：少人数の生徒にクラス全員の前でそれぞれの見解を発表します。着席している指名された数人の生徒の見解を尋ねることで非公式なパネリストをつくることが出来るでしょう。貴方の質問に対して明確で真剣な回答を得ることが出来る時間があるときにパネリストを使いましょう。多くの生徒が参加できるようにパネリストを交代でさせましょう。

- **Games:** Use a fun exercise or a quiz game to elicit students' ideas, knowledge, or skill. TV game shows such as a Family Feud or Jeopardy {quiz shows} can be used as the basis of a game that elicits participation. Use games that spark energy and involvement. Games are also helpful to make dramatic points the students seldom forget.

・**ゲーム**：楽しい練習問題やクイズゲームなどを取り入れ生徒のアイディア、知識、技能を引き出しましょう。テレビ番組のファミリーヒュードやジェバディ（クイズ番組）などのやり方は生徒を参加させる為の基礎的な方法でしょう。エネルギッシュに参加出来るゲームを使いましょう。ゲームの使用によって問題点を挙げるのも効果的であり生徒はめったに忘れることはありません。

(Silberman, pg. 16-18)

Slideshow Presentations　スライドショーによるプレゼンテーション

Whatever the professor's classroom style is, slideshow presentations, e.g., PowerPoint or Keynote, for example, are a popular way to enhance lessons. However, "enhance" is not automatic. These days, many English speakers are familiar with the term "Death by PowerPoint", a term used to describe the large number of poorly designed slideshow presentations. Many of these slides are crowded with small print text, and the handouts, with the standard 6 slides per page, are nearly impossible to read. Clearly, updated methods of slideshow preparation are needed.

授業の形式がどのようであれ、スライドショーによるプレゼン、例えばパワーポイントやキーノートなどは、授業を強化する為に使われる最も一般的な方法です。しかしながら、“強化”というは、文字通りではありません。最近英語を話す人の間で良く知られている言い回しに“パワーポイントによる死”と言うものがあります、これは枚数の多い完成度の低い構成のスライドショーによる発表を表現したものです。このようなスライドは、無数の小さな文字で埋め尽くされ、ハンドアウトの資料には 1 ページにスライドが 6 枚載っている、これは、ほとんど読む事ができない状態です。明らかにスライドショーによる発表の最新の方法を知る必要があります。

Presentation Zen by Garr Reynolds is an excellent resource for improving PowerPoint /Keynote presentations whether for classroom use or for other purposes such as conferences and meetings. The author has lived in Japan for many years and is familiar with both Japanese and Western styles of PowerPoint presentations (note to the "Mac addicts" at Kyudai: he has also worked for Apple.)

Garr Reynolds 氏によるプレゼンテーションＺＥＮは、クラス内でまたは学会や会議で使用するパワーポイント/キーノート発表を改善する上で素晴らしく参考になります。著者は、長年日本で暮らしており日本式、西洋式のパワーポイントによる発表に精通しています。（マック信奉者の方へ：著者は、アップル社にも勤務していました。）

Presentation Zen's approach is loosely based on Zen aesthetic principles: Shibumi 渋 味, understated elegance, Kanso 簡素, simplicity, "less is more", Shizen 自然 naturalness, not overly or slickly designed (note: Mr. Reynolds realizes that the translations are approximate.) Other principles include subtlety, suggestive rather than obvious, empty space, eliminating the non-essential (Reynolds, p. 107-108)

プレゼンテーション ZEN は大まかには次のような美学の原則に基づいています。渋み：控え目な上品さ。簡素：過ぎたるは及ばざるがごとし。自然：過度にまた巧妙に作られ過ぎていない。（Reynolds 氏は、訳は大体であると理解しています。）その他の原則として、繊細さ、あからさまではなく示唆的に、余白、必要でないものの排除です。（Reynolds, p.107-108）

Note that the word "simplicity" does not mean changing your message to make it easy for the four-year-old brain to understand. It refers more to a message that is clear and direct. (Reynolds, p. 103)

簡素という点は、伝えたい内容を 4 歳児にわかる様な内容に変更するのではないと言うことを確認しておきたいと思います。貴方の伝えたい内容を明確に直接的に伝えるという意味です。（Reynolds,p.103）

Many presenters overload their slides with text. Fewer words and visuals can create a greater impact. Allow empty space around the images. A slide should not be crowded with images. (Reynolds, p. 145)

多くの発表者は、スライドに有り余るほどの文字を載せています。少なめの文字と画像がよりインパクトを残します。画像の周りには余白があるようにしましょう。スライドが、画像でいっぱいになることがないようにしましょう。（Reynolds,p.145）

Eliminating the nonessential means paring down to just what you need. Slide template designs, extra images, too many colors and needless animation distract from your message. Even graphs are often better as 2-D images rather than 3-D images. (Reynolds, p. 122)

必要でないものの排除という点は、必要な内容に圧縮すると言うことです。スライドのテンプレートデザイン、余分なイメージ画像、色の使いすぎ、必要のないアニメの挿入などは貴方の伝えたい内容の邪魔になる場合があります。グラフにおいても３Ｄ画像より２Ｄ画像の方が良い場合多くあります。（Reynolds, p.122）

Reynolds talks about some trends in Japan. Japanese employees entering a corporation are told to make slides with "minimal text". The problem is that "minimal text" means a lot of bullet points with a lot of text, graphs and tables. Slides with a graphic (however powerful) & few words "prove" that the employee isn't working hard enough. The standard "1-7-7: one idea per slide, seven lines per slide, seven words per line" is popular. (Reynolds, p 130) This in as interesting concept as it takes only a few seconds to copy & paste data from a report onto a slide (this was demonstrated to a class of graduate students in a presentation class.) Finding or creating a visual with high impact can take much more "effort."

Reynolds 氏は日本での傾向について語っています。会社に入社した社員が“最小限の文字”でスライドを作成するよう指示されます。ここでいう“最小限の文字”とは実際のところは多くの文字、グラフ、表を伴った箇条書きの事です。画像（実際はインパクトがあります。）と少ない文字のスライドは、社員が十分に仕事をしていないと“証明”しているようなものです。“1－7－7：1 枚のスライドに一つの意見、1 枚のスライドに 7 行、1 行につき 7 文字”これが基準です。（Reynolds, p.130）これは非常に興味深いコンセプトです。数秒のコピーペースでレポートからスライドにデータを移すことができます。（これは、大学院生のプレゼンテーションクラスにおいて実演されたものです。）実際強いインパクトを与える画像を探したり作成することは大変な努力が必要です。

He also notes that in Japan, it is very common for a presenter to show slides with the lights off. However, even in an audio presentation, communication is both audio *and* visual. The audience needs to see the presenter to connect with him or her. (Reynolds, p 208-9). "Lights out" creates additional problems. One is that it's very easy to fall asleep in the dark. For those do that manage to stay awake, taking notes is next to impossible.

さらに、Reynolds 氏は次のように述べています。日本ではスライドで発表する際に部屋の明かりを消すのが一般的です。しかし発表と言うのは音声だけではなく視覚によるコミュニケーションであります。聴衆は発表者とつながる為には発表者を見る必要があります。(Reynolds, p 208-9) “消灯”は別の問題を発生させます。暗闇の中では容易に居眠りをしてしまいます。睡魔に襲われず起きていられたとしてもメモをとることはまた至難なことです。

Creating an effective presentation requires a lot of thought and planning. However, a good presentation means that your audience (students or colleagues) will hear (& enjoy) your message better.

効果的なプレゼンテーションをつくる為には多くの思考と計画を伴います。しかし、良い発表と言うのは聴衆（学生または同僚）が貴方の伝えたい内容に耳を傾け（楽しみ）よりよく理解する事が出来ることです。

Presentation Zen is available in book or video format. Both are *highly* recommended. In truth, it should be considered required reading (or viewing.)

プレゼンテーション Zen は書籍化またはオーディオブック化されています。どちらも是非一読をお勧めしたいものです。実際のところ、必読書（必見）として検討されるべきではないかと考えます。

Summary - 10 Point List of Slideshow Presentation Basics

1. *You* are the presenter. Your slides are there to help *you*; you are not there to enhance your …...slides.

2. Use strong visuals that send a lasting image to the audience.

3. Use a maximum of a few words per slide. (You can always use handouts.)

4. Use a remote clicker/laser pointer.

5. Don't use animation & other special effects unless you *really need* them.

6. Make eye contact with your audience; do not stare at the slides.

7. If you *do* need to look at your notes, use the "Look (at the notes), Look up, then Speak …..(clearly!)" technique.

8. If you *must* use bullet points, e.g. to summarize key points, use as few as possible.

9. Be familiar with the technology, don't waste time getting the equipment to work.

10. Technology sometimes fails; have a plan B.

11. Do not make slides that look like this 10-point list! ☺

まとめ　ースライドショーによる発表基礎編１０のポイント

１．発表するのは貴方です。：スライドは貴方の発表を手助けするものであり、貴方がスライドの内容を引き立たせる為にいるのではありません。
２．聴衆に強い印象を残すインパクトのある画像を使用しましょう。
３．１枚のスライドに対し出来る限り文字を減らしましょう。（配布資料をうまく使いましょう。）
４．リモコン/レーザーポインターを使用しましょう。
５．アニメーションやその他の特殊効果は、必ずしも必要でなければ使用は控えましょう。
６．アイコンタクトを聞き手としましょう。スライドばかりを見ることはやめましょう。
７．ご自分のメモを見る必要がある場合は、“メモを見る、目をあげる、そして話す（はっきりと)”この手法を用いましょう。
８．箇条書きを使用しなければならない場合は、要点となる箇所の要約などで、出来る限り少なくしましょう。
９．機械に強くなりましょう。装置を稼働させる為に無駄な時間をかけないようにしましょう。
１０．機械は万能ではありません。第２のプランを備えておきましょう。

この１０のポイントリストの様なスライドは作らないようにしましょう。（一枚のスライドに 10 項目の箇条書きが並んでいるような形式）

Syllabus Design シラバスのデザイン

Often, a syllabus is viewed as simply a document that outlines the course: the course name, dates and times that it meets, required and recommended textbooks, and daily class outline. In some cases, that may be enough. However a syllabus can serve as so much more. It can function as an agreement between the student and the teacher, a way to set the tone of the class in terms of the seriousness and expectations of classes, an action plan for the students, even a way to navigate the course (Matejka & Kurke, 1994).

シラバスは通常、単に授業計画として見られます。その内容は科目名、日程、時間、必要なテキストまたは、推薦テキスト、通常のクラスで学ぶ概要などです。このような情報で十分な場合もありますが、シラバスはさらに多くの事に応えることができます。シラバスは、生徒と教員との間での協定という機能を持っています。クラスへの本気度と期待度、あるいは、生徒の行動計画と言う観点からクラスの方向性と言ったものを決めることが出来ますし、授業の進め方についてでさえもです。(Matejka & Kurke, 1994)

A well-designed syllabus can go even much further than that. It can include your teaching philosophy, allowing students to understand how all the class activities fit within that philosophy. This is an excellent place to include student responsibilities in terms of academics (such as homework, attendance, papers, tests, class work, group work, self-monitoring) or behavioral (sleeping, eating, bullying, cheating, civilities.) You can describe how you plan to use technology in the classroom. It can also point out campus resources for using these technologies. This will save everyone time during the semester. In addition to giving information to the student, a complete syllabus can also prevent misunderstandings and future problems (Grunert-O'Brien, et al, 2008), for example, students who fail a course for excessive absenteeism won't be able to complain that they didn't know that sleeping in class results in being marked absent.

上手く構成されたシラバスは、通常のシラバス以上の役割を果たします。シラバスには貴方の教育理念を含ませることが出来、生徒に貴方の理念がどのような形でクラスに反映されるかを理解してもらえるのです。学業（宿題、出席、提出物、試験、クラスでの活動、グループ活動、自分自身で学ぶ姿勢など）または、態度（居眠り、飲食、いじめ、カンニング、礼儀正しさ）と言う点で生徒の責任を盛り込むのに最適な場であります。クラス内でどのような機器を使用するかについても説明するとよいでしょう。使用する機器について言及することで大学が提供できる設備について指摘する事が出来ます。この様にすることで学期の間全ての人の時間を無駄にすることがありません。生徒に情報を提供する点について加えるならば、完成されたシラバスは、誤解や後々起こりえる問題などを回避する事が出来ます。(Grunert-O'Brien, et al, 2008)、例えば、生徒が長期欠席（常習的な欠席）で単位を落とした場合、授業中の居眠りが欠席扱いされる事を知っていたならば文句を言うことができません。

Teaching Philosophy 教育理念

At present, there is no "official" place in the Kyushu University online syllabus form for a teaching philosophy. However, that may change in the future so it is worth considering writing your teaching philosophy. It can be added to the Course Outline. Basically, a teaching philosophy is What we do, How we do it, and Why we do it. It also includes attitudes of classroom education and beliefs of student capabilities. It helps the student understand what drives a course.

現在のところ、九州大学内のオンラインシラバスには教育理念を載せる専用の箇所と言ったものがありません。しかし、それは近い将来変更される可能性もありますので貴方の教育理念について書くことを考えてみるのはどうでしょうか。授業概要内に加えることも可能ではないでしょうか。基本的に教育理念と言うものは、何をするのか、どのようにするのか、そして何故するのかについてです。また授業がどのようにあるべきかまた生徒がどの様であるべきかを含みます。この様な情報は生徒にとって授業に対する理解度を深めます。

Course Description 授業内容の説明

A good course description will help to build student interest in the course. It will show how the course is taught. If the course is an elective, it should explain why students should take this course. Ideally, it shows it connects to other courses and to the students' future careers. (Grunert-O'Brien, et al. p.51)

よい授業内容の説明は生徒にとって授業への興味持たせる良い材料となります。説明の中でどのように授業が教えられるのかを示します。授業が選択科目であれば何故この授業を選択すべきかを書き記すことも必要でしょう。理想としては、授業が他の授業とも関連性があり将来の経歴にもつながる事を示すのが良いでしょう。(Grunert-O'Brien, et al. p51)

Course objectives　授業方針

Course objectives outline the knowledge and skills students need to achieve by the end of the course, how they will gain the knowledge and skills, and how they will demonstrate their learning. They should also outline how well they need to demonstrate their learning.

授業方針とは生徒は授業の最終日までに修得する必要のある知識、技術の概要を説明するものです。そこには、どのようにその知識、技術を習得するのか、そしてどのように習得した知識を証明ができるのかも含まれます。（テストや発表等）授業方針では、生徒がどれほどうまく修得した内容を実際に証明するべきかを説明する必要もあります。

This usually starts with something like: Upon completion of the course, students will be able to…"

この事については通常次のような表現を使います。：授業終了時には、生徒は次のような内容ができるようになるでしょう。

The *process* of learning must be considered. For example, if students are required to be able to compare two different healthcare systems, you must ensure that they know how to write comparative essays.

学びのプロセスは考慮に入れるべきでしょう。例えば、ある二つの医療制度を比較しなければならなかった場合、生徒が比較論の書き方を知っているということを確認しなければなりません。

Teaching Support Services of University of Guelph, Guelph, Ontario, Canada suggest the following 2 points for writing effective objectives:

カナダ、オンタリオ、グエルフ大学のティーチングサポートサービスでは効果的な学習方針を書く点について以下の 2 点のポイントについて提案しています。

Are They Effective Objectives?
1) Once you have written your objectives, ask yourself: "
How will I evaluate the achievement of this learning objective?"
and
"**How well do attendees have to do to demonstrate achievement (mastery) of the objective?** (standard)"

2) Remember the acronym, **SMART**, when writing learning objectives:

S – Specific
M – Measurable
A – Achievable
R – Relevant
T – Timely

(TSS Fall 2003)

それは効果的な方針ですか？
1）一旦授業方針を書いたら自問してみましょう。
「この授業方針で私はどのようにして成果を評価するのか？」
そして、
「生徒はどの程度良く授業方針の達成（習熟）を披露しなければならないのか？（基本）」

２）学習方針を書く上で次の頭字語を覚えておきましょう。SMART：

S－具体的に
M－測定可能な
A－達成可能
R－関連性のある
T－時宜にかなった

(TSS Fall 2003)

In general, objectives should be measurable and observable. However, Grunert-O'Brien, et al, point out that sometimes the objective may be to develop an appreciation for something, such as works of art of literature (p. 55). While this is not often the case in the science world, the idea can apply. For instance, students can "gain an appreciation for foreign medical systems". In an ethics course, students "develop an awareness of the complexities of end of life issues". In general, it is best to avoid difficult-to-measure words such as understand, listen, feel, etc. A way to think of this is to use verbs that can be used on an exam.

一般的に授業方針は測定可能であり観察できるものであるべきです。しかし授業方針の中には何かに対して鑑賞力を養うものもあると言っています。例えば、文学芸術などがその部類です(p.55)。 科学の世界で鑑賞力を養うと言うのはあてはまらないかもしれませんが考えを当てはめることはできるでしょう。例えば生徒は海外の医療制度（医療の実態）についての鑑賞力を得ることはできるかもしれません（数字などに置き換えることのできない学びや成果）。倫理の授業では、終末期の複雑な問題について意識を高めることができるかもしれません。一般的には授業方針を書くにあたりはかることのできない言葉、例えば理解する、聞く、感じる等このような言葉の使用は避けた方がよいでしょう。試験で使用されるような言葉を使うようにしましょう。

Bloom's Taxonomy divides cognitive understanding into six levels. They are arranged from the lowest (remembering) to the highest (creating) levels of thought. The original was created by Benjamin Bloom in 1956 for university examiners. It was revised in the 1990's by Anderson, L. W., & Krathwohl. (Forehand, 2005) These are useful in creating general and specific objectives for a course as well. The following is a table of revised levels with sample verbs. Note, if you are comfortable with the original version, feel free to continue using it.

Bloom の分類学では、認識理解度を 6 段階に分けています。考えと言うものを最も低い値（記憶する）から最も高い値（創造する）に区分します。オリジナルは Benjamin Bloom 氏によって 1956 年大学の試験官に向けて作成されました。1990 年代に Anderson, L.W.,&Krathwohl によって改訂されました。（Forehand, 2005）これらは同じく一般的なまた詳細な授業方針を作成するに当たり役に立つものです。次に挙げますのはサンプル動詞付の改訂されたレベルの表になります。オリジナル版で良ければそのままお使い下さい。

In an active learning context, many of the class objectives, activities and tests will be concentrated in the last 3 sections as they are geared towards the higher order thought processes in problem solving.

能動的授業の内容で多くの授業方針、活動、試験は、最後の３部門に集中しています。複雑な問題解決方法についてはこの３部門の動詞を使用します。

Revised Bloom's Taxonomy	
Remembering recall facts and information	define, identify, label, list, match, name, repeat, reproduce, select, state, tell, underline
Understanding re-state problems and ideas in one's own words	classify, convert, explain, estimate, paraphrase, restate, summarize, translate
Applying use class learning in another setting or in a new way	arrange, change, calculate, compute, construct, demonstrate, dramatize, Illustrate, operate, prepare, solve, test, use
Analyzing break down ideas into components to understand the whole	analyze, compare & contrast, differentiate, dissect, distinguish, examine, infer, inspect, separate, test
Evaluating interpret & make judgments	assess, check, critique, design, defend, evaluate, grade, judge, justify, rate, review
Creating combine parts to form new meaning or structure	assemble, categorize, collect, develop devise, diagnose, formulate, generate organize, plan, prepare, rearrange
(Source: Anderson & Krathwohl, 2001, pp. 67-68)	

Bloom 氏の改訂版分類

想起 事実や情報を思い出す	定義する、確認する、分類する、記入する、一致させる、名前を挙げる、繰り返す、再現する、選ぶ、提示する、伝える、強調する
理解 問題点や考えを自分自身の言葉で置き換える	分類する、転換する、説明する、推定する、言い換える、言い直す、要約する、別の表現で置き換える
適用 授業で学んだ内容を別の状況あるいは新しい方法で使う	整える、変更する、判断する、計算する、構成する、実証する、脚色する、例示で説明する、操作する、準備する、解く、考査する、利用する
分析 全体を把握するために考えを構成要素まで細分化する	分析する、比較＆対比、差別化、詳細に分析する、区別する、観察する、推察する、調査する、分類する、吟味する
評価 解釈をする＆判断を下す	決定する、確認する、批評する、考案する、主張する、評価する、採点する、判断する、弁明する、等級に分ける、再調査する
創造 重要な部分を組み合わせ新しい意味や形を構成する	組み立てる、分類する、まとめる、発展させる、工夫する、診断する、考案する、生み出す、整理する、計画する、準備する、再整理する

（出典：Anderson & Krathwohl, 2001, pp.67-68）

Table of Verbs for Objectives, Class Work and Exams

Abstract	Acquire	Activate	Adjust	Analyze
Appraise	Arrange	Articulate	Assemble	Assess
Assist	Associate	Breakdown	Build	Calculate
Carry out	Catalog	Categorize	Change	Check
Cite	Classify	Collect	Combine	Compare
Complete	Compose	Compute	Conduct	Construct
Contrast	Convert	Coordinate	Count	Criticize
Critique	Debate	Decrease	Define	Demonstrate
Describe	Design	Detect	Develop	Differentiate
Direct	Discover	Discriminate between	Discuss	Distinguish
Dramatize	Draw	Employ	Establish	Estimate
Evaluate	Examine	Explain	Explore	Express
Extrapolate	Formulate	Generalize	Identify	Illustrate
Implement	Improve	Increase	Infer	Integrate
Interpret	Introduce	Investigate	Judge	Limit
List	Locate	Maintain	Manage	Modify
Name	Observe	Operate	Order	Organize
Perform	Plan	Point	Predict	Prepare
Prescribe	Produce	Propose	Question	Rank
Rate	Read	Recall	Recognize	Recommend
Reconstruct	Record	Recruit	Reduce	Reflect
Relate	Remove	Reorganize	Repair	Repeat
Replace	Report	Reproduce	Research	Restate
Restructure	Revise	Rewrite	Schedule	Score
Select	Separate	Sequence	Simplify	Sketch
Skim	Solve	Specify	State	Structure
Summarize	Supervise	Survey	Systematize	Tabulate
Test	Theorize	Trace	Track	Train
Transfer	Translate	Update	Use	Utilize
Verbalize	Verify	Visualize	Write	

授業方針、クラス内の活動、試験用動詞一覧

概念化する	習得する	活性化する	順応する	（理解を深める為に詳細に調べて）分析する
（能力を） 評価する	用意する	（考えを） はっきりと述べる	整理する	（価値や重要性を） 評価する
援助する	関連付ける	分析する	（計画等） 組み立てる	（結果等を） 判断する
（計画など） 実行する	目録を作る	分類する	変わる	検査する
引用する	秘密にする	集まる	組み合わせる	比較する
仕上げる	構成する	（コンピューターで） 計算する	（調査・実験等） 行う	作図する
対比する	（機能や用途等が） 転換する	まとめる	計算する	批判する
批評する	論争する	減少する	を定義する	行動で示す
説明する	設計する	を見つける	発展する	差別化する
指示する	見出す	区別する	議論する	識別する
脚色する	（結論や結果を） 出す	（手段を） 用いる	（事実・理論等を） 立証する	（程度や数量等を） 推定する
（品質などを） 評価する	（詳細に） 調べる	証明する	（詳しく） 調査する	（考えや気持ちを） 述べる
推定する	（理論など） 系統立てて説明する	一般的に話す	を同一視する	（例示や比較等で） 説明する
（政策など） 実行する	（能力等が） 伸びる	増加する	（見聞きしたことから） 推論する	まとめる
解釈する	取り入れる	（詳細に） 研究する	（品質や可能性を） 評価する	限定する
記入する	（場所を） 示す	（批判を受ける意見等を）擁護する	成し遂げる	修正する
指名する	観察する	機能する	整える	体系化する
遂行する	計画を立てる	（事実・結論等を） 強く示唆する	予測する	準備する
指図する	創作する	提案する	質問する	位置づける
（重要性や価値を） 評価する	解釈できる	思い出す	を見分ける	推薦する
再構成する	記録する	採用する	縮小する	反映する
関連付ける	取り除く	再編成する	直す	繰り返す
取り替える	報告する	再生する	（徹底的に） 研究する	（より明確にするために） 言い直す
再編成する	訂正する	書き改める	予定を決める	採点する
選択する	分散する	を順序付ける	単純化する	概略を説明する
ざっと見る	（問題などを） 解く	を明確に述べる	はっきり言う	構造化する
（話,記事など） 要約する	（仕事などを） 管理する	を概観する	系統立てる	一覧にする
テストする	理論をたてる	（調査して） 突き止める	（進行・発展を） 追っていく	教育する
（情報などが） 伝わる	（易しい言葉で） 説明する	（最新の情報で） 改訂する	利用する	活用する
言語化する	（調査等によって） 確認する	可視化する	書く	

Note: This section is longer than others because well-done course objectives make it easier to create course content and exams.

注意：このセクションは、他と比べて長くなっていますが、それは良く練られた授業方針では、授業内容や試験問題をより簡単に作成する事が出来ると考えた為です。

If this seems like a lot to add to a syllabus, consider the following. A small study was done at Yeditepi University in Turkey. In it, instructors and students were interviewed regarding their opinions of a course syllabus. The instructors thought "the longer the better" as it gives more information for the students. Most of the students, on the other hand, felt that a syllabus that was more than three or four pages long was too long and they didn't read it. They simply looked for test dates and homework due dates. Interestingly, they did try to make judgments about the *personality* of the teacher based on the syllabus. They felt that a short syllabus written with a large font showed that the teacher was not very demanding. A long detailed syllabus indicated that the teacher would be very demanding in the class (Tokatli & Keşli, 2009.)

もし、この様な内容をシラバスに加えることが負担であると感じられるなら次のような事を試されてはどうでしょうか。トルコの Yeditepi 大学で小規模な研究が行われました。そこでは、指導者と学生が授業シラバスについてどのように考えるかインタビューを受けました。指導者のほとんどはシラバスから得る情報が多ければ多いほど生徒にとって良いと判断し“より詳しく書かれたシラバスがより良い”と考えました。ほとんどの学生はシラバスが３，４ページ以上あると長すぎると感じ読むことはありません。彼らは、試験日と課題の締切日をチェックするだけです。興味深いことに彼らはシラバスから教員の性格を読み取ろうとしました。大きなフォントで短いシラバスであれば担当教員はそこまで厳しくないであろうと判断しました。詳細に書かれた長いシラバスは、クラス内で大変厳しい教員であるということを示していると考えています。
(tokatli & Kesli, 2009)

Classroom Phrases…講義を行う際に役立つ英語表現

Greeting the class
Good morning, class.
Good afternoon, everyone.
Good evening.
Hello everyone.

Introductions
My name is Mr. Suzuki.
I'm Mr. Suzuki.
Welcome to Ethics 2.
This is Ethics 2.
This class meets every Tuesday and Thursday, 1st period.

Beginning the first class
Here's a copy of the syllabus.
Here's a copy of the class guidelines.
Please sit in front of the room.
Please fill the first five rows of the classroom.
I'm going to seat you by your student numbers.
I'm going to seat you in alphabetical order.

Beginning the lesson
Please…
Let's get started.
Open your books to page…
Turn to page...
You'll need your dictionaries/protractors/rulers/handouts.

During Class
Come in.
Come up and write it on the board.
Listen carefully; this is important.
I would like you to write this down.
Please look at this graph/photo/section.
Please do the next one.
Please try the next one.
This is important, please write this down
Pencils down.
Raise your hands when you know the answer/ have finished.
Would you mind switching the lights on?
Could someone open the window?
Can you see the board/ this picture/the screen?
What do you think about…?
What do you think?
What do you think is meant by…?
What do you think Einstein meant when he said…?
Any questions?
Any questions so far?

"I'm sure this won't be a problem in *this* class,

but I'm supposed to remind you that cheating and plagiarism will not be tolerated."

Working individually
Work individually.
Work by yourselves.
Please read silently.

Getting Students into groups
Get into your groups.
Get into groups of 4.
Sit back-to-back.
Work in pairs.
Make groups of four with your desks facing each other.

Starting a Task
The purpose of this activity is**…**
We are going to practice…
You'll need your outlines/articles/papers/case studies.
You have five minutes to do this.
You need to be finished by 11:15.

Checking understanding
Can someone repeat the assignment/instructions?
Are you with me?
Are you OK?
Everyone OK so far?
Do you get it?
Do you understand?
Do you follow me?

Putting things in order
First,
Next,
After that,
Then,
Finally,
First of all, today,...
Now we will go on to the next exercise.
Which question are you on?
Next one, please.
Who hasn't answered yet?
Let me explain what I want you to do next.
Have you finished?
For the last thing today, let's...

Feedback for the students

Correct answers
Right.
Yes.

Fine.
Quite right.
That's right.
That's it.
That's correct.
Yes, you've got it.
You've got the idea.
Very good.
That's very good.
Well done.
Very fine.
I like that.
That's exactly the point.
That's just what I was looking for.

Positive reinforcement
Terrific
Fantastic.
Excellent.
Good thinking.

When the students' answers are a little off
It depends.
It might be, I suppose.
In a way, perhaps.
Sort of, yes.

Gentle correction and encouragement
You're almost right.
That's almost it.
You're halfway there.
You've almost got it.
You're on the right track
Take your time.
There's no need to rush.
There's no hurry.
We have plenty of time.
Go on. Give it a try.
Have a guess.
Maybe this will help you.
Here's a clue/hint.

Improvement
That's more like it.
That's much better.
That's a lot better.
You've improved a lot.

Gently pointing out that the student is mistaken
Hmm, not quite.
I'm afraid that's not quite right.
Good try, but not quite right.

Have another try.
Not quite right. Try again.

Asking for repetition and clarification
Could you speak a little louder please?
What did you say?
One more time, please.
Say it again, please.
Sorry, I couldn't quite catch what you said.
Like this?
I'm not quite sure what you mean.
Could you explain that?
Could you rephrase that?

Ending a task
You have one more minute.
Please finish up.
Everybody please sit down.
Please return to your seats.
Please move the desks/chairs back to their original positions.
Please share your results with a neighbor/ nearby group/the class.

When time runs out
We're running out of time, so we'll finish this next time.
We'll continue this chapter/discussion/activity next time.

When the teacher leaves the room
I'll be right back.
Excuse me for a moment.
I'll be back in a moment.

When the teacher is sick
I'm afraid I can't speak any louder.
I seem to be losing my voice.
I have a sore throat.
I have a headache.
I'm not feeling well today.
Do you mind if I sit down?

One Last Thing
One last thing…
Hang on a moment.
Just a moment, please.
One more thing before you go.

Homework
For next week, do the exercises at the end of chapter six.
Your homework is to read pages 52 to 75 / chapter 17.
The homework is due next week/on May 19/in two weeks/by the end of the week.
There is no homework this week.

I will walk around and check your homework.
Show me your homework.
Pass your homework forward.
Hand in your homework.
Please place your homework in the box/folder.
Please check your homework with your classmates.

Ending the lesson
See you next week/ time/ Monday.
See you on the 24th.
Remember, next week we meet in the library/ room 6.

Exams
Everything off your desks.
Clear your desks.
You can have only a pencil and an eraser on your desk.
Keep your eyes on your own paper.
No talking at all during the exam.
If you have any questions, you must ask ***me*** (& only me)
Time's up!
Pencils down!
Please pass your papers in.
Please pass your papers forward.

Sample course…シラバスのサンプル

Note: this is only a sample to show how all the possible pieces can fit together. It is not a course taught at Kyushu University. It is not necessary to think of this as a template.

Course: Psychiatric Aspects of General Patient Care
Instructor: Professor John Q. Public
Text: Psychiatric Aspects of General Patient Care 3rd ed.
Bonnie Fossett, & Marlene Nadler-Moodie
1996 Western Schools Press

Prerequisites: Human Growth & Development, Psychology 1, Pharmacology. Concurrent enrollment in one (1) of the following: Medical /Surgical Nursing, Pediatrics, Labor & Delivery.

Teaching Philosophy:
-Education is the key to shaping the future, as such, for me, there is no higher calling.
-A warm atmosphere facilitates learning.
-Students have their own experiences to share.
-All students are capable of excelling, but may need direction in terms of time management, understanding assignments, team work. They also require adequate resources, which the teacher provides.
-It is reasonable to expect that all students will work to the best of their abilities.
-It is reasonable to expect that all students will contribute to a positive class atmosphere.
-There is no relationship between students' achievement and their worth as people.
-Even though health care is serious business, a light-hearted approach is sometimes best.

Purpose of the Course: The clinical rotation courses, Medical /Surgical Nursing, Pediatrics, Labor & Delivery & Psychiatric Nursing courses are, by necessity, taught separately. In reality, mental health issues permeate every aspect of patient care whether it's a bit of anxiety before surgery or chronic psychosis along with a myocardial infarct. Nurses need to be able to competently address mental health issues in order to provide the highest quality care. This course will assist the student in integrating psychiatric nursing skills with medically oriented nursing skills.

Course Description: Students will study the assessment and nursing treatment of psychological problems in the medical patient. Students will practice process recordings and conducting mental status exams in class and in the clinical setting. Students will create nursing and teaching care plans reflecting psychiatric and medical issues. We will work together to suggest real improvements in the various clinical settings (note: the clinical settings may not be receptive to our suggestions, but we will continue the process in class)

Course Objectives: Upon completion of the course, students will be able to:

Identify the major components of the communication process.
Illustrate the differences between assessment tools and identify their components.
Indicate how the concept of anxiety relates to the nursing care of patients.
Identify affective illness and how principals of psychiatric nursing affect care of the patient.
Illustrate how to assess suicidal ideation in patients.
Illustrate how to recognize psychosis.
Identify the chemically dependent and impaired patient.
Identify the signs and symptoms of confusion in a patient.
Identify the manifestations of anorexia nervosa and bulimia.

Describe nursing interventions that can be used to manage a violent patient.
Identify interventions to decrease noncompliance.
Identify manipulative behaviors and discuss appropriate nursing interventions.
Discuss common psychological responses to acute cardiac illness.
Identify psychotropic medications and discuss medication administration
Discuss ethical and legal issues that are of concern in the practice of mental health nursing.

Class 1 Unit 1
The Communication Process and Interpersonal Skills
Review of process recordings
Homework (HW): add to Table 1-1 & 1-2 phrases that open/close communication

Class 2 Unit 2
How to Assess Psychological Problems
MSE of clinical patient
Role play
HW: process recordings

Class 3 Unit 3
Nursing Management of the Anxious Patient
Add to hospital units' interventions for anxiety
Clickers: Which is not anxiety physiological response
Critiquing health articles
HW: Critique the article distributed in class (6 different articles)

Class 4 Units 4 & 5
Nursing Management of the Patient with Depression or Related Mood & Disorder
Nursing Management of the Suicidal Patient
Article: Depression and Concurrent Epilepsy
Maintaining safety on the medical unit
HW: safety recommendations for the unit you are working on

Class 5 Unit 6
Nursing Management of the Psychotic Patient
Article: When the Orthopedic Patient becomes Psychotic
Introduce case study assignment
HW: process recordings

Class 6 Unit 7
Nursing Management of the Chemically Dependent Patient
Article: Post-op Pain Management in the Chemically Dependent Patient
Brainstorm a list of distractions for the newly straight patient
HW: Prepare a chart of possible drug interactions between your patient's medications and the Common Illicit Drugs handout

Class 7 Unit 8
Nursing Management of the Confused Patient
Differentiate between elderly pseudo-dementia & true dementia
Clickers: false beliefs of dementia
HW: process recordings

Class 8 Unit 9
Nursing Management of the Patient with an Eating Disorder
Teaching care plan for high school students
Pros and Cons of various treatment options
HW: create a nutrition plan from a patient on the Eating Disorder Patient Profile handout

Class 9 Unit 10
Nursing Management of the Potentially Violent Patient
Article: Managing Hypertension in the Patient with a History of Violence
Strategies for Violence Management
HW: comment on the study "Action Plan for Patients with PTSD at the Braintree VA"

Class 10 Unit 11
Nursing Management of the Noncompliant Patient
List ways to ascertain & respond to a foreigner 's cultural reasons for noncompliance
HW: reflection: your reactions to the noncompliant patient

Class 11 Unit 12
Nursing Management of the Manipulative Patient
Brainstorm responses to flattery
HW: process recordings

Class 12 Unit 13
Nursing Management of the Patient with Heart Disease
Brainstorm responses to the hostile patient
HW: Critique the article "Hypertension and the Type A patient"

Class 13 Unit 14
Uses and Administration of Psychotropic Medication
Discussion: When Psychotropic Medication is not appropriate
HW: process recordings

Class 14 Unit 15
Ethical and Legal Issues in Psychiatric Nursing
Case studies due!

Class 15 Final Exam

Sample lecture: Eating Disorders…サンプル講義　摂食障害

The

National Eating Disorders Association Educator Toolkit

　:www.nationaleatingdisorders.org/.../NEDA-Toolkit-Educators_09-15-08.pdf

What is an eating disorder?

Eating disorders are serious, but treatable, illnesses with medical and psychiatric aspects. The eating disorders most commonly know to the public are anorexia and bulimia. There are also other eating disorders, such as binge-eating disorder. Some eating disorders combine elements of several diagnostic classifications and are known as “eating disorder not other wise specified.” These disorders often coexist with a mental illness such as depression, anxiety, or obsessive-compulsive disorder. People with an eating disorder typically become obsessed with food, body image, and weight. The disorders can become very serious, chronic, and sometimes even life-threatening if not recognized and treated appropriately. Treatment requires a multidisciplinary approach with an experienced care team. Please see the other documents in the toolset for more information about diagnosis, treatment, and common misconceptions.

Who gets eating disorders?

Males and females from ages as young as 7 or 8 years old get eating disorders. While it’s true that eating disorders are more commonly diagnosed in females than males and more often during adolescence and early adulthood than older ages, many cases are also being recognized in males and in women in their 30s and 40s. Eating disorders affect people in all socioeconomic classes, although it was once believed that they disproportionately affected upper socioeconomic groups. Anorexia nervosa ranks as the 3rd most common chronic illness among adolescent U.S. females. Recent studies suggest that up to 7% of U.S. females have had bulimia at some time in their life. At any given time an estimated 5% of the U.S. population has undiagnosed bulimia. Current findings suggest that binge-eating disorder affects 0.7% to 4% of the general population.

Can eating disorders be cured?

Many people with eating disorders who are treated early and appropriately can achieve a full and long-term recovery. Some call it a “cure” and others call it “full remission” or “long-term remission.” Among patients whose symptoms improve—even if the symptoms are not totally gone—(called a partial remission), the burden of the illness can diminish a lot. This can open the way for healthier relationships with food to be implemented, quality of life to improve, and patients feeling happier and more productive. Treatment must be tailored to the individual patient, and most treatment plans involve a combination of psychotherapy, nutritional support, and possibly even medication. The biggest step towards recovery is getting the person with the eating disorder to admit it and accept help.

Controversy exists about the term “cure,” which implies that a patient does not have to be concerned with relapse of the disorder. Many clinical experts prefer the term “remission” and

look at eating disorders as a chronic condition that can be very effectively managed to achieve complete remission from signs and symptoms. Patients may, however, be at risk of a relapse at some future point in life. Many patients in recovery agree that remission more accurately describes their recovery, because they continue to need to manage their relationship with food, concepts about body image, and any coexisting mental condition, such as depression.

If someone I know intentionally vomits after meals, but only before big events—not all the time—should I be concerned?

Yes. Anyone who feels the need to either starve or purge food consumed to feel better has unhealthy attitudes about one or more issues: physical appearance and body image, food, and underlying psychological issues. This doesn't necessarily mean the person has a diagnosable eating disorder, but expressing concern to a friend about the behavior is warranted. If they deny the problem or get defensive, it might be helpful to have information for them about what eating disorders actually are. See the fact sheet on anorexia nervosa and bulimia nervosa.

All information on HealthyMinds.org is from the American Psychiatric Association. The information contained on the HealthyMinds.org Web site is not intended as, and is not, a substitute for professional medical advice. All decisions about clinical care should be made in consultation with your treating physician.

I know someone who exercises every day up to 3 or 4 hours a day. Is this considered to be a sign of an eating disorder?

Perhaps. If the person is not training for a rigorous athletic event (like the Olympics) and if the compulsion is driven by a desire to lose weight, despite being within a normal weight range, or if the compulsion is driven by guilt due to binging, then, yes, the compulsion to exercise is a dimension of an eating disorder. If you know the person well, talk to him/her about the reasons he or she exercises this much. If you are concerned about weight or the rationale behind the excessive exercise regime, seek to put the person in touch with information and resources that could help.

I'm noticing some changes in weight, eating habits, exercise, etc., with a student, but I'm not sure if it's an eating disorder. How can I tell?

Unless you are a physician, you can't make a diagnosis, but you can refer the student to appropriate resources that might help. Keep in mind, however, that denial is typically a big part of eating disorder behavior and a student may be unreceptive to the suggestion that anything is wrong.

A group of students is dieting together. What should we (parents/teachers/student friends) do?

Seeing a friend, family member, or fellow student develop an eating issue or disorder can sometimes lead other students to feel confused, afraid, or full of self-doubt. Other students may begin to question their own values about thinness, healthy eating, weight loss, dieting, and body image. At times students may imitate the behavior of their friends. Imitating the behavior may be one way of dealing with fear, trying to relate to the friend with the eating disorder, or trying to understand the illness. In other cases, a group of students dieting together can create competition around weight loss and unhealthy habits. If dieting is part of

the accepted norm of the peer group, it can be difficult for any young person seeking peer acceptance to resist joining the behavior. Approaching a student who is imitating the behavior of a friend with an eating disorder should be similar to approaching a student with a suspected eating problem.

What should be done when rumors are circulating about a student with an eating disorder?

If a student has an eating disorder and other students are talking about it to the point where the student with the eating disorder is very uncomfortable coming to school, a strategy to deal with the gossip is in order. What a student is suspected of having or is diagnosed with, is an eating disorder, fellow students may have different reactions. Rumors often develop that further isolate the student experiencing the eating disorder. Rumors can also be a form of bullying. Here are some suggested strategies:

- Assess the role of the rumors. Sometimes rumors indicate students' feelings of discomfort or fear.

- Demystify the illness. Eating disorders can sometimes become glamorized or mysterious. Provide actual, age appropriate information that focuses on several aspects of the illness such as the causes as well as the social and psychological consequences (not only the extreme physical consequences).

- Work privately with students who are instigating and/or perpetuating rumors:
- Talk about confidentiality and its value. For example, promoting the idea that medical information is private and therefore no-one's business

- Without identifying the students as instigators of the rumors, encourage them to come up with ways of dealing with the rumors by establishing a sense of shared concern and responsibility. For example, *"Can you help me work out a way of stopping rumors about (student's name), as he/ she is finding them very upsetting?"*

Are the issues different with males with an eating disorder? What do I say?

Some aspects may be different in males. Important issues to consider when talking to or supporting a male who may have an eating disorder include the following:

Stigma.

Eating disorders are promoted predominantly as a female concern. Males may feel a greater sense of shame or embarrassment. It may be even more important not to mention the term "eating disorder" in the discussion, but rather focus on the specific behaviors you have noticed that are concerning. Keep the conversation brief and tell him what you've observed directly and why it worries you. For more guidance, refer to the document in this toolkit: "Ways to start a discussion with someone who might have an eating disorder."

Eating disorder behavior presents differently in males.

Although the emotional and physical consequences of eating disorders are similar for both sexes, males are more likely to focus on muscle gain, while females are more likely to focus on weight loss.

What's the difference between overeating and binge eating? Is attendance at a program like Weight Watchers sufficient to treat binge eating?

Most people overeat now and then, but binge eating is distinguished by eating an amount of food within a specified time that is larger than the amount that most people would consume during a similar time and circumstance, and feeling out of control over eating during the binge. Because programs like Weight Watchers often include a self-monitoring component, such as detailing daily eating patterns, they can be helpful in decreasing food consumption. However, they may be insufficient in addressing the underlying emotional or psychological components of an eating disorder and consequences of binges.

Can't people who have anorexia see that they are too thin?

Most cannot. Body image disturbance can take the form of viewing the body as unrealistically large (body image distortion) or of evaluating one's physical appearance negatively (body image dissatisfaction). People with anorexia often focus on body areas where being slim is more difficult (e.g., waist, hips, thighs). They compare their other body parts then, and believe they have "proof " of their perceived need to strive for further weight loss. Body image dissatisfaction is often related to an underlying faulty assumption that weight, shape, and thinness are the primary sources of self-worth and value. Adolescents with negative body image concerns are more likely than others to be depressed, anxious, and suicidal.

I know someone who won't eat meals with family or with friends at or outside school. How can he/she not be hungry? Does he/she just not like food?

Most likely, the person is overwhelmingly preoccupied with food. A person with an eating disorder does not like to eat with others, does not like anyone questioning his/her food choices, and is totally consumed with refraining from eating. Is the person hungry? Yes! But the eating disorder controls the person.

Key Sources:

American Psychiatric Association http://www.healthyminds.org/factsheets/LTF-EatingDisorders.pdf

Victorian Centre of Excellence in Eating Disorders, The Royal Melbourne Hospital, Australia http://www.rch.org.au/ceed/

Andrea Vazzana, Ph.D., Clinical Assistant Professor of Child and Adolescent Psychiatry NYU Child Study Center. http://www.aboutourkids.org/files/articles/nov.pdf

Common Myths about Eating Disorders

Eating disorders are not an illness

Eating disorders are a complex medical/psychiatric illness. Eating disorders are classified as a mental illness in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Health Disorders (DSM-IV)*, are considered to often have a biologic basis, and co-occur with other mental illness such as major depression, anxiety, or obsessive-compulsive disorder.

Eating disorders are uncommon

They are common. Anorexia nervosa, bulimia nervosa, and binge-eating disorder are on the rise in the United States and worldwide. Among U.S. females in their teens and 20s, the prevalence of clinical and subclinical anorexia may be as high as 15%. Anorexia nervosa ranks as the 3rd most common chronic illness among adolescent U.S. females. Recent studies suggest that up to 7% of U.S. females have had bulimia at some time in their lives. At any given time an estimated 5% of the U.S. population has undiagnosed bulimia. Current findings suggest that binge-eating disorder affects 0.7% to 4% of the general population.

Eating disorders are a choice

People do not choose to have eating disorders. They develop over time and require appropriate treatment to address the complex medical/psychiatric symptoms and underlying issues.

Eating disorders occur only in females

Eating disorders occur in males. Few solid statistics are available on the prevalence of eating disorders in males, but the disorders are believed to be more common than currently reflected in statistics because of under-diagnosis. An estimated one-fourth of anorexia diagnoses in children are in males. The National Collegiate Athletic Association carried out studies on the incidence of eating-disordered behavior among athletes in the 1990s, and reported that of those athletes who reported having an eating disorder, 7% were male. For binge-eating disorder, preliminary research suggests equal prevalence among males and females. Incidence in males may be underreported because females are more likely to seek help, and health practitioners are more likely to consider an eating disorder diagnosis in females. Differences in symptoms exist between males and females: females are more likely to focus on weight loss; males are more likely to focus on muscle mass. Although issues such as altering diet to increase muscle mass, over-exercise, or steroid misuse are not yet criteria for eating disorders, a growing body of research indicates that these factors are associated with many, but not all, males with eating disorders.

Men who suffer from eating disorders tend to be gay

Sexual preference has no correlation with developing an eating disorder.

Anorexia nervosa is the only serious eating disorder

All eating disorders can have damaging physical and psychological consequences. Although excess weight loss is a feature of anorexia nervosa, effects of other eating disorders can also be serious or life threatening, such as the electrolyte imbalance associated with purging.

A person cannot die from bulimia

While the rate of death from bulimia nervosa is much lower than that seen with anorexia nervosa, a person with bulimia can be at high risk for death and sudden death because of purging and its impact on the heart and electrolyte imbalances. Laxative use and excessive exercise can increase risk of death in individuals who are actively bulimic.

Subclinical eating disorders are not serious

Although a person may not fulfill the diagnostic criteria for an eating disorder, the consequences associated with disordered eating (e.g., frequent vomiting, excessive exercise, anxiety) can have long-term consequences and requires intervention. Early intervention may also prevent progression to a full-blown clinical eating disorder.

Dieting is normal adolescent behavior

While fad dieting or body image concerns have become “normal” features of adolescent life in Western cultures, dieting or frequent and/or extreme dieting can be a risk factor for developing an eating disorder. It is especially a risk factor for young people with family histories of eating disorders and depression, anxiety, or obsessive-compulsive disorder. A focus on health, wellbeing, and healthy body image and acceptance is preferable. Any dieting should be monitored.

Anorexia is “dieting gone bad”

Anorexia has nothing to do with dieting. It is a life-threatening medical/psychiatric disorder.

A person with anorexia never eats at all

Most anorexics do eat; however, they tend to eat smaller portions, low-calorie foods, or strange food combinations. Some may eat candy bars in the morning and nothing else all day. Others may eat lettuce and mustard every 2 hours or only condiments. The disordered eating behaviors are very individualized. Total cessation of all food intake is rare and would result in death from malnutrition in a matter of weeks.

You can tell if a person has an eating disorder simply by appearance

You can’t. Anorexia may be easier to detect visually, although individuals may wear loose clothing to conceal their body. Bulimia is harder to “see” because individuals often have normal weight or may even be overweight. Some people may have obvious signs, such as sudden weight loss or gain; others may not. People with an eating disorder can become very effective at hiding the signs and symptoms. Thus, eating disorders can be undetected for months, years, or a lifetime.

Eating disorders are about appearance and beauty

Eating disorders are a mental illness and have little to do with food, eating, appearance, or beauty. This is indicated by the continuation of the illness long after a person has reached his or her initial ‘target’ weight. Eating disorders are usually related to emotional issues such as control and low self-esteem and often exist as part of a “dual” diagnosis of major depression, anxiety, or obsessive-compulsive disorder.

Eating disorders are caused by unhealthy and unrealistic images in the media

While socio-cultural factors (such as the ‘thin ideal’) can contribute or trigger development of eating disorders, research has shown that the causes are multi-factorial and include biologic, social, and environmental contributors. Not everyone who is exposed to media images of thin “ideal” body images develops an eating disorder. Eating disorders such as anorexia nervosa have been documented in the medical literature since the 1800s, when social concepts of an ideal body shape for women and men differed significantly from today—long before mass media promoted thin body images for women or lean muscular body images for men.

Only people of high socioeconomic status get eating disorders

People in all socioeconomic levels have eating disorders. The disorders have been identified across all socioeconomic groups, age groups, both sexes, and in many countries in Europe, Asia, Africa, and North and South America.

Recovery from eating disorders is rare

Recovery can take months or years, but many people eventually recover after treatment. Recovery rates vary widely among individuals and the different eating disorders. Early intervention with appropriate care can improve the outcome regardless of the eating disorder.

Although anorexia nervosa is associated with the highest death rate of all psychiatric disorders, research suggests that about half of people with anorexia nervosa recover, about 20% continue to experience issues with food, and about 20% die in the longer term due to medical or psychological complications.

Eating disorders are an attempt to seek attention

The causes of eating disorders are complex and typically include socio economic, environmental, cultural, and biologic factors. People who experience eating disorders often go to great lengths to conceal it due to feelings of shame or a desire to persist in behavior perceived to afford the sufferer control in life. Eating disorders are often symptomatic of deeper psychological issues such as low self-esteem and the desire to feel in control. The behaviors associated with eating disorders may sometimes be interpreted as 'attention seeking"; however, they indicate that the affected person has very serious struggles and needs help.

Purging is only throwing up

The definition of purging is to evacuate the contents of the stomach or bowels by any of several means. In bulimia, purging is used to compensate for excessive food intake. Methods of purging include vomiting, enemas and laxative abuse, insulin abuse, fasting, and excessive exercise. Any of these behaviors can be dangerous and lead to a serious medical emergency or death. Purging by throwing up also can affect the teeth and esophagus because of the acidity of purged contents.

Purging will help lose weight

Purging does not result in ridding the body of ingested food. Half of what is consumed during a binge typically remains in the body after self-induced vomiting. Laxatives result in weight loss through fluids/water and the effect is temporary. For these reasons, many people with bulimia are average or above-average weight.

You're not sick until you're emaciated

Only a small percentage of people with eating disorders reach the state of emaciation often portrayed in the media. The common belief that a person is only truly ill if he or she becomes abnormally thin compounds the affected individuals' perceptions of body image and not being "good" at being "sick enough." This can interfere with seeking treatment and can trigger intensification of self-destructive eating disorder behaviors.

Kids under age 15 are too young to have an eating disorder.

Eating disorders have been diagnosed in children as young as seven or eight years of age. Often the precursor behaviors are not recognized until middle to late teens. The average age at onset for anorexia nervosa is 17 years; the disorder rarely begins before puberty. Bulimia nervosa is usually diagnosed in mid-to-late teens or early 20s, although some people do not seek treatment until even later in life (30s or 40s)

You can't suffer from more than one eating disorder

Individuals often suffer from more than one eating disorder at a time. Bulimarexia is a term that was coined to describe individuals who go back and forth between bulimia and anorexia. Bulimia and anorexia can occur independently of each other, although about half of all anorexics become bulimic.

Achieving normal weight means the anorexia is cured

Weight recovery is essential to enabling a person with anorexia to participate meaningfully in further treatment, such as psychological therapy. Recovering to normal weight does not in and of itself signify a cure, because eating disorders are complex medical/psychiatric illnesses.

Key Sources:

ECRI Institute Feasibility Study on Eating Disorders Awareness and Education Needs. March 2004; 24 p.

An Eating Disorders Resource for Schools, The Victorian Centre of Excellence in Eating Disorders and the Eating Disorders Foundation of Victoria (2004); pgs 11-12

Eating Disorders: A Time for Change

Russell, Michael. 2006 Myths About Eating Disorders. *EzineArticles* (December 02), http://ezinearticles.com/?Myths-About-Eating-Disorders&id=374760

U.S. Department of Health and Human Services; Office on Women's Health; Eating Disorders

www.mirror-mirror.org/myths.htm

American Psychiatric Association *Diagnostic and Statistical Manual for Mental disorders-IV*

Physiological impact of an eating disorder on athletic performance

Lisa Franseen, Ph.D., clinical sport psychologist writes about the physiologic effects of eating disorders on athletic performance.

http://www.usasynchro.org/athletes/health/eating2.htm

Overall, the impact of an eating disorder is related to the severity and duration of the condition, individual health status, body stature, and genetics. Franseen lists the following common symptoms to watch out for. These symptoms can occur because of malnutrition, dehydration, electrolyte imbalance, and osteoporosis. Please see the full article for more details.

Symptoms

Fatigue Dizziness Loss in endurance Loss in coordination Loss in muscular strength Loss in speed Muscle cramps Overheating

The list below describes medical problems that can arise from specific eating disorders.

Anorexia Nervosa

-Heart failure. This can be caused by slow heart rate and low blood pressure. Those who use drugs to stimulate vomiting, bowel movements, or urination are also at high risk for heart failure. Starvation can also lead to heart failure, as well brain damage.

-Brittle hair and nails; dry skin. Skin may dry out and become yellow, and the affected person can develop a covering of soft hair called lanugo

-Mild anemia
-Swollen joints
-Reduced muscle mass
-Osteoporosis

Bulimia Nervosa

- Erosion of tooth enamel from the acid produced by vomiting
- Inflammation of the esophagus (the tube in the throat through which food passes to the stomach)
- Enlarged glands near the cheeks (giving the appearance of swollen cheeks)
- Damage to the stomach from frequent vomiting
- Irregular heartbeat
- Heart failure
- Electrolyte imbalances (loss of important minerals like potassium) that can lead to sudden death
- Peptic ulcers
- Pancreatitis (inflammation of the pancreas, which is a large gland that aids digestion)
- Long-term constipation

Binge Eating Disorder

-High blood pressure
- High cholesterol
- Fatigue
- Joint paint
- Type II diabetes
- Diseased arteries
- Gallbladder disease
- Heart disease

Tips for school nurses:
National Association of School Nurses Guidance

“School nurses are required, by the scope of nursing practice, to provide education and counseling to students about health issues, including mental health issues.”
— National Association of School Nurses
Actions the school nurse can undertake to reduce the interference of mental health problems on school performance:

- Provide mental health promotion activities at school to enhance self-esteem, problem-solving techniques, positive coping skills, and anger- and nonviolent conflict management
- Educate school staff to enable them to identify the signs and symptoms of mental health problems
- Provide on-going assessment, intervention, and follow-up of the physical and mental health of the school community
- As a trusted professional, school nurses can help families acknowledge mental health issues and begin to deal with them
- Act as liaison between students and with families to assess the family’s ability and willingness to seek services for a student at risk

- Act as a liaison between family and mental health providers in the community
- Actively engage in school committees including curriculum committees, child-study teams, student assistance teams, and crisis intervention teams
- School nurses, along with school psychologists, counselors, social workers, and other support staff should be part of the mental health treatment service team

Key Sources:
Source: National Association of School Nurses www.nasn.org/Default.aspx?tabid=276

Body mass index (BMI) guidelines for school nurses:
If a school is weighing all students to calculate BMI, the following protocol is recommended. BMI charts for children are available online at the U.S. Centers for Disease Control and Prevention. Be aware that weighing students with an eating disorder can exacerbate the situation. Consider excusing those students from weigh-ins. Before any weigh-in program:
- Inform parents or guardians in writing (letter, email, school note) that you will be weighing and measuring each student. Let parents know that they may opt out of the weigh-in by providing a physician's health examination from the child's physician.
- Respect student privacy by weighing and measuring each student individually in a private location.
- Do not comment on any student's height or weight, because these are sensitive issues for almost anyone.
- Mail or email all letters containing height and weight measurements to the parents' home. Do not give the letter to the student to deliver or place it in a student's backpack. Send reports home on all students, not only to students who scored below the 5th percentile or above the 95th percentile for BMI. Children who are smaller or larger in size should not be made to feel as though something is wrong with their bodies.
- Include with all letters, if possible, educational information to parents about healthy nutrition and exercise.

Other tips
Participate in health education or physical education lesson planning and facilitating classes on topics such as:

- Good nutrition
- Healthy exercise regimens and risks of over-exercise
- Adequate hydration during sports activities
- Body changes associated with puberty and adolescence (including weight gain)
- Talk with boys about health and legal risks associated with anabolic steroids and suggest natural ways to increase muscle and strength

Healthy and Wise: Middle School (grades 6-8) Coordination Health School Nurse Participation Plan
http://www.caprockpress.com/middleschool/Middle%20School%20Nurse%20Participation%20Plan(07-08).pdf
Guidelines for Parents; Guidelines for Nurses
http://www.medainc.org/uploads/File/docs/24.doc

Lecture Suggestions

-Pause after each section and allow students to consolidate their notes.
-For the last three minutes of class, have students discuss their notes together and ask questions. Coarsely

Active Learning Suggestions

-The above suggestion "Pause after each section and allow students to consolidate their notes." will also work as an active learning suggestion

-Divide the vocab words from the Glossary among groups of students. Students write definitions & share them with the class. This can be done in class or for homework.

-Give each group one section of vocab words from the Glossary. Students write definitions & share them with the class.

-At the beginning of the class, introduce 2 statistics on ED "Which is accurate?" (X/O or clickers)

-List of statements from FAQ & common Myths. Which are true & which are false {from FAQ & common Myths}

Example:
Which of the following is true?
A. People who have anorexia can see that they are too thin.
B. Eating disorder behavior presents differently in males.
Either individually or in groups, have students hold up their signs
indicating their choice

-Write a teaching care plan for students, parents, educators, coaches, using various profiles/ diagnoses

-Write a nursing care plan for inpatients, outpatients

-Practice effective communication techniques, one student acting as a patient, the other as a health care provider.

Glossary

General Vocabulary

キーワード集

A
Absence　欠席
academic advisor　指導教員
Academic Affairs Section 教務係
academic background　学歴
academic credentials　教員の資格
academic deficiency　学業不振、成績不良
academic degree　学位
academic dishonesty　学業の不正行為
academic dismissal 退学、放校
academic hour　授業時間
academic performance　学業
academic year, fiscal year 年度
acceptance　（入学）許可
Accounts Section　経理係
Accreditation 認定、許可
administrative staff　行政官、事務職員
admission capacity of students　学生定員
admission　入学許可
Alien Registration Card 外国人登録証
alumni association　同窓会
answer sheet　解答用紙
applicant　出願者、申請書
application fee 出願料、申請料
application Form　入力願書
apply　出願する、申請する
approve　承認する、許可する
aptitude　適正
argument　論旨
assign　割り当てる
assignment　課題、宿題
Assistant Professor　助教
Associate Professor　准教授
attached faculty, attached institute　付属施設
attendants　聴講生
Average　可、良
Award　賞
B
Bachelor's degree　学士号
bank account　銀行預金口座
Below average　可、及第
Board of Trustees　理事会
bulletin board, notice board　掲示板、連絡板
C
CALL 要求
Cancellation　休講
certificate of enrollment　在学証明書
certificate of graduation　卒業証明書
chief　係長
city office　市役所
class attendance　授業出席
class repeat, grade repetition, repeat　留年
class　授業、講義
classroom　教室
clinical　臨床の、病床の
clinical experience　臨床経験
clinical practice　臨床診療
clinical setting　臨床背景
code　規約、規則
commence　始まる、始める
commencement　卒業式、卒業授与式
commute　通学する、通勤する
complementary　無料の、贈呈の
complete　修了する、完了する
completion　修了
compulsory subject =required subject
compulsory　必修の
consortium　コンソーシアム
counseling　カウンセリング
credit transfer　単位互換
credit　単位
cross-cultural understanding　異文化理解
curriculum　カリキュラム（curricula）
CV (= curriculum vitae)　履歴書
D
daily necessities　日用品
deadline of submission　提出期限
deadline　〆切
Dean of Faculty of　－　－研究院長
Defer　延期する
Deficient　学業不振な
degree conferral　学位授与
department　学科
department　部門
direct line　直通電話
director of... department　部長
director of... division　課長
director　研究長、センター長
Director-General of the administration Bureau 事務局長
doctor's course　博士課程後期
doctoral degree　博士号

dropout, failing in the examination　落第
E
Eligibility　資格
Enroll　入学させる、登録させる
enrollment status　在籍身分証
Enrollment　入学、入学登録
essay examination, essay test　論述試験
exam　試験
Excellent　優
excessive absence　過度の欠席
executives　執行部
expel, expulsion　除名する、免職にする
extension number　内線番号
F
Facilities Department　施設部
Facilities section　工営係
Facilities　施設
Faculty of　－　－研究院
Fair 可、良
Fellow　特別研究員
Fellowship　研究奨学金
Finance Department　財務部
foreign student, international student　留学生
G
General Affairs Department　総務部
General affairs section　庶務係
genetic resources technology. 遺伝子資源工学
Gloves　手袋
Good　良
gown and gloves　　ガウンと手袋
GPA (grade-point average)　成績評価点平均
graduate student　学部学生
graduation ceremony　卒業式、学位授与式
graduation requirements　成績履修単位
Grant-in-aid for scientific research 科学研究費補助
guidelines for application　募集要項
H
Handout　配布物
health　健康
health sciences　保健学
housing　住居、宿舎
I
Identification　身分証明書
IELTS (International English Language Testing System)　国際英語力判定テスト
Inauguration　開始、就任式
incoming　後任の
incoming president　後任の総長
insurance card　保険証
intercultural communication　異文化コミュニケーション
International Affairs Department　国際交流部
International Student Center　留学生センター
International Student Exchange Division 留学生課
International Student House　留学生会館
international student　留学生
Internship　インターンシップ
invoice　請求書
J
Japan Society for the Promotion of Science (JSPS)　日本学術振興会
Japan's Student Services Organization (JASSO)　日本学生支援機構
K
Kyushu Univ. International House 国際交流会館
L
Laboratory　研究室、講座
leave of absence　休学
Leave　休暇、休学
lecturer , instructor　講師、講演者
lecture 講義
Lessons　練習
letter of admission　入学許可書
level of aspiration　要求水準
liberal arts　教養科目
Library Affairs Section　図書係
licensing exam　資格試験
M
Major　専門、専攻
malpractice　医療ミス
Marginal　可、及第
Master's course　修士課程
Master's degree　修士号
medical checkup　健康診断
medical library　医学図書館
medical technician　医療技師
medical technology　医療技術
medicine　薬
Memorial Auditorium　記念講堂
Ministry of Education, Culture, Sports, Science and Technology (MEXT)　文部科学省
misconduct　違法行為
MOU (Memorandum of Understanding)了解覚え書き（大学間交流などの）
N
Newcomer　新入生
notice　お知らせ
notification　通知、公示、通知書
notify　通知する
Nurse　看護師

nursing school　看護学校
O
Official excused absence　公欠（正当な理由のある欠席）
outstanding progress　　優（成績）
overnight cramming　一夜づけ
overseas student　留学生
P
Part-time job　アルバイト
part-time lecturer　非常勤講師
Passing　可、良、及第
Performance　学力
Personnel Section　人事係
Plant Resources　植物資源科学
Plagiarism　盗作
President　学長、総長
Professor emeritus　名誉教授
Professor　教授
R
radiological technician　放射線技師
Radiology　放射線
Registration　登録
Reimburse　支給する
remedial　補習の、補講の
research associate　准助教、助手
Research Cooperation Section　研究協力係
research expenses, research funds 科学研究費
Research Planning Department　企画部
Research Planning Division　企画課
research student　研究生
right for conferment of degree　学位授与権
Roman letters　ローマ字
S
Safety guidance　安全指導
Satisfactory　加、申し分ない
Scholarship　奨学金
score　得点、成績
School uniform　制服
Semester calendar system　第 2 期
sexual harassment　セクシャルハラスメント
signup sheet　登録票
special auditor　特別聴講生
special research student　特別研究生
specialize (= major)　専攻する
Status of Residents　在留資格
Stealing　盗難
steering committee member　運営委員
Steering Committee　特別コース実施会議

steering committee　運営委員会
stipend　給付金
Student Accident Insurance　学生傷害保険
Student Affairs Department　学務部
student fare　学割
Student Section　学生係
study abroad　留学
sub director　課長補佐
subject　教科、科目
submit　提出する
supplementary　補足の、補習の
suspend　停学にする
suspension　停学
syllabus (pl. Syllabi /syllabuses)　シラバス
T
teacher, faculty member, faculty staff　教員
teaching assistant TA
technical staff　技術職員
term of residence　在留通知
term　学期
thesis research　論文研究
thesis　学位論文、卒業論文
ticket stubs　チケットの半券
transcript　成績証明書
trustee　理事
tuition waiver　授業料免除
tuition　授業料、学費
U
Undergraduate　学部
uniform, school　制服
uniform, clinical　制服
uniform, hospital　制服
University autonomy　大学自治
University Councilor　評議員
University Councils　大学審議会
University reform　大学改革
V
Valedictorian　卒業生総代
valedictory speech　答辞（卒業式で）
verification　証明、検証、立証
vice president　副学長
W
Waiver　免除
Ward Office　区役所
Withdraw　退学する、（現金を）引き出す
Withdrawal　退学

Nursing

看護学キーワード

《看護学》Nursing Vocabulary　A

(from English Injection, used with permission)

A
abdominal pain 腹痛
abrasion *n* すり傷
accounting department 会計部
acute *adj* 急性
allergy n アレルギー
--to be allergic to ... *adj* ～にアレルギーがある
anemia n 貧血
anesthesiology *n* 麻酔科
angiography *n* 血管造影
ankle 足首
anti-inflammatory 抗炎症薬
anti-pyretic / fever reducer *n* 解熱剤
antibiotics 抗生物質
appendicitis 虫垂炎
appetite *n* 食欲
apply to the affected area *v* (薬を)患部にぬる
arthritis 関節炎
asthma 喘息
athlete's foot 水虫
B
back 背中
bacteria バクテリア
barium enema バリウム注腸
biopsy 生検
blood 血
blood clots 血塊
blood pressure 血圧
blood transfusion 輸血
bone 骨
bone marrow (transplant) 骨髄 (移植)
bored *adj* 退屈している
bowel sounds 腸ぜん動音
brain (disease) 脳の(病気)
bruise 痣
burning pain 焼ける様な痛み
burp *n*, *v* げっぷを(する)
buttocks 臀部
C
cardiology 循環器科
CAT scan X線体軸断層写真
cataract 白内障
catheter ｶﾃｰﾃﾙ
cheek 頬
chest pain 胸の痛み
chills *n* 寒気
chin あご
chronic *adj* 慢性

circulation 循環
cold n 風邪
colon 結腸
colonoscopy 結腸鏡検査
complications *n* 合併症
confused *adj* 混乱している
consent form 承諾書
constipation *n* 便秘
contact dermatitis 接触皮膚炎
convulsions ひきつけ
cystitis 膀胱炎
D
dentist 歯医者
depressed *adj* 落ち込んでいる
dermatology 皮膚科
diabetes *n* 糖尿病
diarrhea 下痢
diet n 食生活
disease *n* 病気
dissolve *v* 溶ける
dressing 包帯
dull pain 鈍痛
duodenal ulcer
duodenum 十二指腸
E
ear, nose & throat clinic (ENT) 耳鼻咽喉科
eczema 湿疹
edema *n* むくみ
embarrassed *adj* 恥ずかしい
emergency *n* 非常事態
emergency room *n* 救急外来
enema 浣腸
energy (say "ｴｰﾅｼﾞｰ") *n* ｴﾈﾙｷﾞｰ
enlarged prostate 前立腺肥大症
epidural anesthesia 硬膜外麻酔
epilepsy *n* てんかん
eye drops 点眼
eyebrow 眉
F
Fasting blood sugar test 空腹時血糖検査
fatigue *n* 疲労
fever *n* 熱
fibroid tumor 線維腫瘍
follow-up 再度の診察
foot 足
forehead 額
fracture *n* 骨折
frustrated *adj* いらだっている
fungus *n* 真菌

G
gain / lose weight *v*
gallbladder 胆嚢
gallstones 胆石症
gastric ulcer 胃潰瘍
gastroscopy *n* 胃内視鏡検査
general anesthesia 全麻酔法
glaucoma 緑内障
gout 痛風
gripping pain しめつけられるような痛み
H
hay fever 花粉症
hearing test 聴力検査
heart attack (M.I.) 心筋梗塞
heart disease 心臓病
hepatitis 肝炎
herniated disc 椎間板ﾍﾙﾆｱ
herpes 陰部ﾍﾙﾍﾟｽ
hip 腰
hip joint 股関節
hives じんま疹
hypertension 高血圧
I
I.V. 点滴
immune system 免疫システム
incision 切開
infection *n* 感染
inflammation *n* 炎症
informal *adj* 語的な
inhaler 吸入薬
injection (shot) 注射
internal use medicine 内服薬
intestinal cramps 腸痙攣
intestinal pain 腸の痛み
itch *n* かゆみ
J
joint 関節
joint dislocation *n* 関節脱臼
K
kidney disease 腎臓病
L
large intestines 大腸
laxative 下剤
leg 脚
leukemia 白血病
lifestyle *n* 生活様式
liver disease 肝臓病
local anesthesia 局所麻酔
lower back 腰
lump しこり
lung disease 肺病
M
mammogram マンモグガフィ
measles はしか

medical history *n* 病歴
medication *n* 薬物医療
menstrual cramps 生理痛
MRI, magnetic resonance imaging 磁気共鳴画像法
mumps おたふく風邪
muscle aches 筋肉痛
N
nasogastric tube 経鼻胃管
nausea *n* 吐き気
nerve *n* 神経
nervous *adj* 緊張している
neurology 神経科
nose bleed 鼻血
nose drops 点鼻薬
numbness しびれ
O
obstetrics/gynecology 産科 婦人科
oncology 腫瘍科
operating room (OR) 手術室
ophthalmology 眼科
orthopedics 整形外科
P
pain, ache *n* 痛み
palpitations 動悸
pancreas 膵臓
pap test 子宮癌検査
pediatrics *n* 小児科
pertussis, whooping cough 百日咳
physical (exam) 健康診断
physical/occupational therapy 理学/作業療法
"pins and needles" , (or {ex.} hands & feet are "asleep") ぴりぴりする感じ
pneumonia 肺炎
pregnant *adj* 妊娠
protein たんぱく質
psychiatric disorder 精神障害
psychiatry 精神医科
pulse 脈
R
radiology 放射線科
rash 発疹
reaction 反応
rectum 直腸
relaxed adj 落ち着いている
routine 日課
rubella 風疹
runny nose *n* 鼻水
S
scared *adj* 怖い
sedative 鎮静薬
severe pain 激痛
sharp pain 刺す様な痛み
shocked *adj* 驚いている
short of breath *adj* 息切れ

shoulder pain 肩の痛み
shoulder stiffness 肩こり
side effect 副作用
skin 皮膚
small intestines 小腸
sneezing くしゃみ
sore *adj* 痛い
sore throat *n* のどの痛み
spinal anesthesia 脊髄麻酔
spleen 脾臓
splitting headache 頭が割れるような頭痛
spots *n*
sprain 捻挫
sputum test 痰検査
STD sexually transmitted disease 性病
stomachache *n* 胃痛
stool test 便検査
stressed out *adj* 疲れ果てた
stroke, CVA 脳卒中
sublingual *adj* 舌下の
suggestions 提案
suppository 坐薬
surgery (operation) 手術
surgery (dept.) 外科
surprised *adj*
swelling 腫脹
symptoms 徴候
T
temperature 体温

throbbing pain ずきずきする痛み
thyroid disease 甲状腺病
tired *adj* 疲れて
to weigh someone *v* 体重をはかる
to weigh something *v* 重さをはかる
toe 足の指
tongue 舌
tonsillitis 扁桃腺炎
tuberculosis (TB) 結核
tumor 腫瘍
U
ultrasound 超音波
unhealthy *adj* 不健康
upper/lower GI series 上部/下部消化管撮影
upset stomach 胃のむかつき
urinalysis 尿検査
urology 泌尿器科
UTI (urinary tract infection) 尿路感染症
V
vaccination 予防注射
vaginal exam 婦人科の内診
virus ｳｲﾙｽ
vomit/ throw up *v* 嘔吐
vomiting of blood *n* 吐血
W X Y Z
weight *n* 重さ
widowed *adj*
worried *adj* 心配している
X-ray X 線検査

Selected Prefixes (接頭辞) and Suffixes (接尾辞)
Note: this is not a complete list!!

A- not, without Anti- against Bi- 2, double, twice Bio- life Cardio- heart Cephalo- brain, head Cervico- neck Co-, Syn- together De- from, not, without Dent- teeth Derm- skin Dis- not, Dys-, Mal- bad, difficult, poor Ecto-, Ex-, Extra- outside Endo-, In-, Intra- in, inside, within Gastro- stomach	Hepato- liver Hetero- different, Homo-, Homeo- same, similar Hyper- over, excess Hypo-, Sub- under, less In (Im)- not Inter- between Nephro-, Reno- kidney Mono- 1, single Neuro- nerve Post- after Pre- before Trans- through Tri- 3 -algia - pain	-ectomy - removal -emia - in blood -gram - a mark, tracing -graph - written record -itis - inflammation -lysis - break down, destroy -meter, -metry - measure -oma - tumor -osis - condition -otomy - cut into -pathy - disease -scope, -scopy - look -uria - urine adjective (形) - -ac, -al, -ar, -ic, -ous noun (名)- -ism, -ness, -tion, verb (動)- -ize, -ate, -en,

《看護学》Nursing Vocabulary　B

Nursing Diagnosis　看護診断用語

English	Japanese
Activity intolerance	活動耐性低下
Airway clearance	気道浄化
Anxiety	不安
Aspiration	誤嚥
Attachment	愛着
Autonomic dysreflexia	自律神経反射異常亢進
Bathing self-care	入浴セルフケア不足
Bed mobility	移動障害
Behavior	行動
Bleeding	出血
Blood glucose level	血糖
Body image	ボディイメージ
Body temperature	体温
Breastfeeding	母乳栄養
Breathing pattern	呼吸パターン
Cardiac output	心拍出量
Caregiver role strain	家族介護役割緊張
Childbearing process	出産育児行動
Communication	コミュニケーション
Comfort	安楽
Confusion	混乱
Constipation	便秘
Electrolyte imbalance	電解質平衡異常
Elimination	排泄
Energy field	エネルギーフィールド
Falls	転倒
Family processes	家族機能
Fatigue	疲労
Fear	恐怖
Feeding self-care	摂食セルフケア
Feeding pattern	哺乳パターン
Fluid balance	体液量平衡
Fluid volume	体液量
Functional incontinence	機能性失禁
Gas exchange	ガス交換
Grieving	悲嘆
Growth	成長
Health maintenance	健康維持
Health behavior	健康行動
Home maintenance	家事家政
Hope	希望
Hopelessness	絶望
Hyperthermia	高体温
Hypothermia	低体温

Identity	自己同一性
Immunization status	免疫能
Incontinence	失禁
Infection	感染
Insomnia	不眠
Intracranial adaptive behavior	頭蓋内許容量
Jaundice	黄疸
Knowledge	知識
Latex allergy response	ラテックスアレルギー反応
Liver function	肝機能
Loneliness	孤独感
Maternal /fetal dyad	母親/胎児二者関係
Memory	記憶
Mobility	移動
Moral distress	道徳的苦悩
Motility	運動
Mucous membrane	粘膜
Nausea	悪心
Neurovascular function	神経血管機能
Noncompliance	ノンコンプライアンス
Nutrition	栄養
Pain	疼痛
Parental role conflict	親役割葛藤
Parenting	ペアレンティング
Peripheral neurovascular dysfunction	末梢性神経血管性機能障害
Planning	計画
Poisoning	中毒
Post-trauma response	心的外傷後シンドローム
Power	パワー
Powerlessness	無力
Protection	抵抗性
Rape-trauma syndrome	レイプ-心的外傷シンドローム
Religiosity	信仰心
Relocation stress syndrome	移転ストレスシンドローム
Resilience	レジリエンス
Role conflict	役割葛藤
Role performance	役割遂行
Sedentary lifestyle	坐位中心的ライフスタイル
Self-care	セルフケア
Self-concept	自己概念
Self-esteem	自己尊重
Self health management	自己健康管理
Self-mutilation	自己障害
Self-neglect	セルフネグレクト
Sensory perception	感覚知覚
Sexual dysfunction	性的機能障害
Sexual function	性的機能
Sexuality patterns	セクシャリティパターン
Shock	ショック

Skin integrity	皮膚統合性
Sleep	睡眠
Sleep deprivation	睡眠剥奪
Sleep pattern	睡眠パターン
Social interaction	社会的相互作用
Social isolation	社会的孤立
Sorrow	悲哀
Spiritual distress	霊的苦悩
Spiritual wellbeing	霊的安寧
Spontaneous ventilation	自発換気
Stress overload	ストレス過剰負荷
Sudden infant death syndrome	乳児突然死症候群
Suicide	自殺
Suffocation	窒息
Surgical recovery	術後回復
Swallowing	嚥下
Therapeutic regimen management	治療計画管理
Thermoregulation	体温調節機能
Thought process	
Tissue integrity	組織統合性
Tissue perfusion	組織循環
Toileting self-care	排泄セルフケア
Transfer ability	移乗能力
Trauma	外傷
Unilateral neglect	半側無視
Ventilatory weaning response	人口換気離脱
Violence	暴力
Walking	歩行
Wandering	徘徊
Wheelchair mobility	車椅子移動

《看護学》Nursing Vocabulary　C

Nursing Research　看護研究	
alternative hypothesis	対立仮説
analysis of covariance	共分散分析
analysis of variance	分散分析
applied research	応用研究
applied science	応用科学
baseline measure	ベースライン測定
basic research	基礎研究
bias	偏り
case study	事例研究
case-control study	患者対照研究
causal-comparative study	因果比較研究
causal relationship	因果関係
chi-square test	カイ 2 乗検定
cluster analysis	クラスター分析
cluster sampling	集落抽出法
cording	コード化
coefficient alpha	アルファ係数
coefficient of determination	決定係数
Cohen,J	コーエン
cohort	コ〔ー〕ホート
concept	概念
conceptual definition	概念的定義
conceptual framework	概念枠組
conceptual model	概念モデル
concurrent validity	併存的妥当性
confidence interval	信頼区間
confidentiality	守秘義務
confounding	交絡化
constant comparative method	一定比例法
construct	構成概念
construct validity	構成概念妥当性
content analysis	内容分析
content validity	内容的妥当性
contingency table	分割表
control	コントロール
control group	対照群
convenience sampling	便宜的抽出法
convergent validity	収束的妥当性
correlation coefficient	相関係数
correlational research	相関研究
counterbalancing	順序効果相殺法
covariate	共変量
Cramer's V	クラメールの関連係数 V
criterion-related validity	基準関連妥当性
critical incident technique	クリティカルインシデント技法
critical theory	批判理論

Cronbach's alpha	クロンバック係数
Cronkhite	クロンクハイト
cross-sectional study	横断的研究
cross-tabulation	クロス集計表
cross-validation	交差妥当化
Crowley	クロウリィ
dailectic	弁証法
debriefing	デブリーフィング（公聴会）
deductive reasoning	演繹的推論
degree of freedom	自由度
Delphi technique	デルファイ法
dependent samples	従属標本
dependent variable	従属変数
descriptive research	記述研究
descriptive statistics	記述統計学
deviation score	偏差値
dichotomy	二分関数、二分変数
Dilthey,W	ディルタイ
discourse analysis	ディスクール分析
discriminant analysis	判別分析
discriminant validity	弁別的妥当性
Donaldson	ドナルドソン
double-blind study	二重盲検法
Dubin	デュービン
dummy variable	ダミー変数
effect size	効果の大きさ
emic	イーミック
empirical indicator	経験的参照
empirical referent	経験的表示
empirical research	経験的研究
endogenous variable	内因変数
epidemiological research	疫学〔的〕研究
epistemology	認識論
essences	本質
ethnography	エスノグラフィー
ethnomethodology	エスノメソドロジー
ethnoscience	エスノサイエンス
etic	エティック
evaluation research	評価的研究
exogenous variable	外因変数
experiment	実験
experimental design	実験計画
experimental group	実験群
exploratory data analysis	探索的データ解析
ex post facto research	事後要因研究
external validity	外的妥当性
extraneous variable	付加変数
F test	F 検定
face validity	表面妥当性

factor analysis	因子分析
factor loading	因子負荷量
factorial design	因子計画
field note	フィールドノート
field study	フィールドスタディ〔現地研究〕
fieldwork	フィールドワーク
frequency distribution	度数分布
Fisher's exact test	フィッシャーの正確確率検定
Foucault,M.	フーコー
formative evaluation	形成的評価
fundamental research	基本的な研究
generalizations	一般化
Glaser	グレイザー
grand theory	グランド・セオリー
grounded theory	グラウンデッド・セオリー
Hawthorne effect	ホーソン効果
hierarchical multiple regression	階層的重回帰分析
histogram	ヒストグラム
historical research	歴史的研究
human science	人間科学
Husserl	フッサール
hypothesis	仮説
hypothesis testing	仮説検定、仮説検証
idiographicanalysis	個性記述的分析
IMRAD format	IMRAD フォーマット
independent observations	独立的観測
independent samples	独立標本
independent variable	独立変数
inductive reasoning	帰納的推論
informant	情報提供者・インフォーマント
inferential statistics	推測統計学
informed consent	インフォームド・コンセント
instrumentation	計測
intensive〔in-depth〕interviewing	集中〔深層〕面接
interaction effect	相互作用効果
internal consistency	内的一貫性
internal validity	内的妥当性
interrater reliability	評価者間の信頼性
interpretation	解釈
interval estimetion	区間推定
interval measure	間隔尺度
interval scale	区間尺度
intervening variable	介在変数
intervention research	介入研究
introspection	内省
intuition	純粋直観、直証
inverse relationship	逆相関
key informant	主要情報提供者
Kruskal-Wallis test	クラスカルワリス検定

Lauden	ローデン
law	法則
least squares estimation	最小2乗法
level of significance	有意〔性の〕水準
Levine	レバイン
Levi-Strauss,C	レヴィ＝ストロース
life history	生活歴
life-world	生活世界
Likert scale	リッカート尺度
Lincoln	リンカーン
linear regression	線形回帰
lived experience	生きられた経験
longitudinal study	縦断的研究
Lowenthal	ローヴェンタール
Luckmann	ルックマン
main effect	主効果
manipulation	操作
Mann-Whitney U test	マン-ホイットニーU 検定
Marascuilo	マラスキュイロ
Marcuse	マルクーゼ
Martin	マーチン
matching	マッチング
McCall,W.A.	マッコール
Mead,G.H.	ミード
mean	平均値
measurement	測定
mediating variable	媒介変数
Meleis	メレー
memoing	メモを取る
memos	メモ
meta-analysis	メタ分析
metaparadigm	メタパラダイム
metatheory	メタ理論
methodological research	方法論研究
methodology	方法論
middle-range theory	中範囲理論
Mitchell	ミッチェル
mode	最頻値（モード）
model	モデル
moderator variate	調整変数
Moos	ムース
multiple comparison	多重比較法
multiple regression analysis	重回帰分析
multivariate analysis	多変量解析
multivariate analysis of variance 〔MANOVA〕	多変量分散分析
Munhall	マンホール
narrative analysis	ナラティブ分析
narrow-range theory	狭範囲理論、微視的理論
need analysis	ニード分析

negative relationship	負の関係
Newman	ニューマン
nominal scale	名義尺度
nomothetic analysis	法則定立的分析
nonparametric statistics	ノンパラメトリック統計
nonrecursive model	非逐次モデル
normal distribution	正規分布
Norveck	ノーベック
null hypothesis	帰無仮説
observation	観測、観察
oblique rotation	斜交回転
Oiler	オイラー
one-tailed test	片側検定
ontology	存在論
open codinf	オープン・コーディング
operational definition	操作的定義
ordinal scale	順序尺度
orthogonal rotation	直交回転
Orem	オレム
outlier	外れ値、概測値
paradigm	パラダイム
parallel forms	パラレル・フォーム
parameter	パラメータ、母数
parametric test	パラメトリック検定
participant observation	参加観察
participatory action research	参加型アクションリサーチ
path analysis	パス解析
Pearson's r	ピアソンの積率相関係数
phenomenology	現象学
pilot study	パイロット研究
placebo	プラセボ
point estimation	点推定
Pollock	ポラック
population	母集団
positive relationship	正の関係
posttest	事後テスト
power	検出力
predictve validity	予測的妥当性
premise	前提
Precott	プレスコット
pretest	予備テスト、事前テスト
primary sourse	一次資料
probability sampling	確率標本抽出
problem solving	問題解決法
process analysis	過程解析
proposition	命題
prospective study	予見的研究・前向き研究
Putnam	プットナム
p value	p 値

quantitative analysis	量的研究
quantitative data	量的データ
quantitative research	量的研究
qualitative analysis	質的分析
qualitative date	質的データ
qualitative research	質的研究
quality assuarance	質の保証
quasi-experiment	準実験
questionaire	質問紙(法)
quota sampling	割り当て標本抽出
random assignment	無作為割り当て
random sampling	無作為抽出　ランダム・サンプリング
randomized clinical trial	無作為臨床試験
range	範囲
ratio scale	比率尺度
raw data	生データ
recursive model	逐次モデル
reduction (phenomenological r.)	現象学的還元
reflection	反省
regression analysis	回帰分析
reliability	信頼性
repeated-measures design	反復尺度計画
replication	追研究
research	研究
reserch design	研究計画
residual	残差
retention	把持
retrospective study	追想研究・後ろ向き研究
sample	標本
sampling distribution	標本分布
sampling	標本抽出、サンプリング
saturation	飽和
scale	尺度、スケール
scatter plot	散布図
science	科学
secondary analysis	二次〔的〕分析
semiotics	記号論
sensitivity	感受性、感度性
simultaneous regression	同時回帰
significance level	有意水準
snowball sampling	雪玉抽出法
Spearman	スピアマン
specificity	特殊性
split-halves	スプリット法
spurious relationship	にせの相関関係
standard deviation(SD)	標準偏差(SD)
statistics	統計
stepwise regression	ステップ型回帰
stratified random sampling	層化無作為化抽出法

Strauss	ストラウス
structual equation modeling	構造的等価モデル化
subject	被験者
summative evaluation	総括的評価
survey	調査、標本調査
symbolic interaction	象徴的相互作用〔論〕 シンボリック相互作用論
systematic sampling	系統抽出法
T-test	t検定
test of significance	有意性検定
test-retest	テスト・再テスト、反復試験、 反復テスト
test-retest reliability	再テスト信頼性（再テスト法）
theorem	定理
theoretical sampling	理論的標本抽出
theory	理論
Thorndike,E.L	ソーンダイク
triangulation	三角法、三角測量
true experiment	真の実験
true score	真の得点
Tukey	チューキー
two-tailed test	両側検定
type Ⅰ error	第 1 種の誤り
type Ⅱ error	第 2 種の誤り
unit of analysis	分析単位
univariate descriptive study	1 変量記述的研究
univariate statistics	1 変量統計
unobtrusive research	非干渉的研究
validity	妥当性
variable	変数
variance	分散
Wilcoxon signed rank test	ウィルコックソンの符号付つき順位和の検定
worldview	世界観
z score	z 得点

Radiological Science

医用量子線科学分野キーワード

《医用量子線科学分野》キーワード集

科目名:Fundamental Quantum Mechanics(基礎量子力学)
概要:ブラケットによる量子力学の現代的記法に習熟し、磁気共鳴(MRI)、電 子・陽電子消滅(PET)など、臨床に利用されている現象の量子論的理解を深める。

まず、放射線医療に関係した以下のいくつかの疑問について考えてみよう。
・磁気共鳴法(MRI)の理解は古典的なベクトルの回転モデルだけで十分であ ろうか。

・放射線治療や診断の種々の領域において用いられているモンテカルロシミュレ ーションにおいては、粒子のヒストリーを古典力学的な見方でたどるが、それだ けで十分だろうか。
・PETに利用される消滅線は2個しか発生しないのだろうか、3個発生すること はないのだろうか? 本講義では、このような臨床に利用されているいろいろなミクロな現象を、よ り深く理解することを目指す。そのためには、ディラックによって導入され、フ ァインマンによってポピュラーにされた状態ベクトル(ブラ、ケット)による量 子論の取扱いに慣れることが1番である。

(1) Quantum mechanics (量子力学)
Quantum mechanics, also known as quantum physics or quantum theory, is a branch of physics providing a mathematical description of the dual particle-like and wave-like behavior and interaction of matter and energy. Quantum mechanics describes the time evolution of physical systems via a mathematical structure called the wave function. The wave function encapsulates the probability that the system is to be found in a given state at a given time.

(2) Wave function (波動関数)
A wave function or wavefunction is a probability amplitude in quantum mechanics describing the quantum state of a particle or system of particles. Typically, it is a function of space or momentum or spin and possibly of time that returns the probability amplitude of a position or momentum for a subatomic particle. Mathematically, it is a function from a space that maps the possible states of the system into the complex numbers. The laws of quantum mechanics (the Schrödinger equation) describe how the wave function evolves over time.

(3) Uncertainty principle (不確定性原理)
In quantum mechanics, the Heisenberg uncertainty principle states precise inequalities that constrain certain pairs of physical properties, such as measuring the present position while determining future momentum; both cannot be simultaneously done to arbitrarily high precision. That is, the more precisely one property is measured, the less precisely the other can be controlled or determined. On the other hand, it is possible to imagine a hypothetical apparatus that measures a history of a particular particle's successive positions and momentums while also measuring times and energies to arbitrary accuracies.

(4) Quantum number (量子数)
Any of a set of numbers that together fully determine the state of a quantum mechanical system by quantifying its individual properties. For example, four quantum numbers are used to specify the quantum state of an electron orbiting the nucleus of an atom: one characterizes its basic orbital energy level (principal or first quantum number), one the shape of its orbit (its azimuthal, orbital or second quantum number), one the orientation of its orbit relative to other orbits (magnetic quantum number), and one its spin (spin magnetic number).

(5) Spin（スピン)
All elementary particles of a given kind have the same spin quantum number, an important part of a particle's quantum state. Theoretical and experimental studies have shown that the spin possessed by elementary particles cannot be explained by postulating that they are made up of even smaller particles rotating about a common center of mass. The spin of an elementary particle is a truly intrinsic physical property, akin to the particle's electric charge and rest mass. It turns out that a convenient definition of the spin quantum number *s* is *s* = *n*/2, where *n* can be any non- negative integer. Hence the allowed values of *s* are 0, 1/2, 1, 3/2, 2, etc. The value of *s* for an elementary particle depends only on the type of particle, and cannot be altered in any known way.

(6) Bra-ket (ブラ・ケット)
Bra-ket notation is a standard notation for describing quantum states in the theory of quantum mechanics composed of angle brackets and vertical bars. It can also be used to denote abstract vectors and linear functionals in mathematics..

(7) Fermion（フェルミ粒子)
A fermion can be an elementary particle, such as the electron; or it can be a composite particle, such as the proton. The spin-statistics theorem holds that, in any reasonable relativistic quantum field theory, particles with integer spin are bosons, while particles with half-integer spin are fermions.

(8) Boson （ボーズ粒子)
Bosons are subatomic particles that obey Bose–Einstein statistics. Several bosons can occupy the same quantum state. The word *boson* derives from the name of Satyendra Nath Bose. Bosons contrast with fermions, which obey Fermi–Dirac statistics. Two or more fermions cannot occupy the same quantum state.

(9) Quark （クォーク)
Quarks are fundamental particles which interact through all four of the fundamental forces of physics: gravity, electromagnetism, weak interaction, and strong interaction. Quarks always exist in combination to form subatomic particles known as *hadrons*. Hadrons, just to make things even more complicated, are divided into *mesons* (which are bosons) and *baryons* (which are fermions). Protons & neutrons are baryons. In other words, they are composed of quarks such that their spin is a half-integer value.

(10) Lepton（レプトン)
Leptons are fundamental particles that do not experience strong interaction. There are three "flavors" of leptons: the electron, the muon, and the tau. Each flavor is composed of a "weak doublet," which is the aforementioned particle along with a virtually massless neutral particle called a neutrino. Thus the electron lepton is the weak doublet of electron & electron- neutrino.

(11) Gauge boson（ゲージボソン)
Gauge bosons are bosonic particles that act as carriers of the fundamental forces of nature. More specifically, elementary particles whose interactions are described by gauge theory exert forces on each other by the exchange of gauge bosons, usually as virtual particles. Photons are gauge bosons of the electromagnetic interaction

(12) NMR (Nuclear magnetic resonance)（核磁気共鳴)
Nuclear magnetic resonance (NMR) is an effect whereby magnetic nuclei in a magnetic field absorb and re-emit electromagnetic (EM) energy. This energy is at a specific resonance frequency which depends on the strength of the magnetic field and other factors. This allows the observation of specific quantum mechanical magnetic properties of an atomic nucleus. Many scientific techniques exploit NMR phenomena to study molecular physics, crystals and non-crystalline materials through NMR spectroscopy. NMR is also routinely used in advanced medical imaging techniques, such as in magnetic resonance imaging (MRI).

(13) Precession（歳差運動)

Precession is a change in the orientation of the rotation axis of a rotating body. It can be defined as a change in direction of the rotation axis in which the second Euler angle (nutation) is constant. In physics, there are two types of precession: torque-free and torque-induced. Larmor precession is the precession of the magnetic moments of electrons, atomic nuclei, and atoms about an external magnetic field.

(14) Positron (陽電子)
The positron or antielectron is the antiparticle or the antimatter counterpart of the electron. The positron has an electric charge of +1e, a spin of 1⁄2, and the same mass as an electron. When a low-energy positron collides with a low-energy electron, annihilation occurs, resulting in the production of two or more gamma ray photons (see electron-positron annihilation).

(15) Annihilation (消滅)
When a low-energy electron annihilates a low-energy positron (antielectron), they can only produce two or more gamma ray photons, since the electron and positron do not carry enough mass-energy to produce heavier particles and conservation of energy and linear momentum forbid the creation of only one photon. These are sent out in opposite directions to conserve momentum.

科目名:Anatomical Basis of Molecular & Functional Imaging Technology (分子機能基礎画像科学論)

Key Words:

(1) Gene (遺伝子)
A gene is a unit of heredity in a living organism. It normally resides on some stretches of DNA and RNA that codes for a type of protein or for an RNA chain that has a function in the organism. Living things depend on genes, as they specify all proteins and functional RNA chains. Genes hold the information to build and maintain an organism's cells and pass genetic traits to offspring, although some organelles (e.g. mitochondria) are self- replicating and are not coded for by the organism's DNA. (Wikipedia)

(2) Amino acid (アミノ酸)
Amino acids are molecules containing an amine group, a carboxylic acid group and a side-chain that varies between different amino acids. The key elements of an amino acid are carbon, hydrogen, oxygen, and nitrogen. They are particularly important in biochemistry, where the term usually refers to alpha-amino acids. An alpha-amino acid has the generic formula H2NCHRCOOH, where R is an organic substituent; the amino group is attached to the carbon atom immediately adjacent to the carboxylate group (the α–carbon). (Wikipedia)

(3) Protein (たんぱく質)
Proteins are biochemical compounds consisting of one or more polypeptides typically folded into a globular or fibrous form in a biologically functional way. A polypeptide is a single linear polymer chain of amino acids bonded together by peptide bonds between the carboxyl and amino groups of adjacent amino acid residues. The sequence of amino acids in a protein is defined by the sequence of a gene, which is encoded in the genetic code. In general, the genetic code specifies 20 standard amino acids; however, in certain organisms the genetic code can include selenocysteine, and in certain archaea-pyrrolysine. (Wikipedia)

(4) DNA
Deoxyribonucleic acid, or DNA, is a nucleic acid that contains the genetic instructions used in the development and functioning of all known living organisms. The main role of DNA molecules is the long-term storage of information. DNA is often compared to a set of blueprints, like a recipe or a code, since it contains the instructions needed to construct other components of cells, such as proteins and RNA molecules. The DNA segments that carry this genetic information are called genes, but other DNA sequences have structural purposes, or are involved in regulating the use of this genetic information. (Wikipedia)

(5) RNA
Ribonucleic acid (RNA) is one of the three major macromolecules (along with DNA and proteins) that are essential for all known forms of life. Like DNA, RNA is made up of a long chain of components called nucleotides. Each nucleotide consists of a nucleobase (sometimes called a nitrogenous base), a ribose sugar, and a phosphate group. The sequence of nucleotides allows RNA to encode genetic information. For example, some viruses use RNA instead of DNA as their genetic material, and all organisms use messenger RNA (mRNA) to carry the genetic information that directs the synthesis of proteins. (Wikipedia)

(6) cell (細胞)
The cell is the functional basic unit of life. It was discovered by Robert Hooke and is the functional unit of all known living organisms. It is the smallest unit of life that is classified as a living thing, and is often called the building block of life. Some organisms, such as most bacteria, are unicellular (consist of a single cell). Other organisms, such as humans, are multicellular. Humans have about 100 trillion or 1014 cells; a typical cell size is 10 μm and a typical cell mass is 1 nanogram. (Wikipedia)

(7) nucleus (核)
In cell biology, the nucleus (pl. nuclei; from Latin nucleus or nuculeus, meaning kernel) is a membrane-enclosed organelle found in eukaryotic cells. It contains most of the cell's genetic material, organized as multiple long linear DNA molecules in complex with a large variety of proteins, such as histones, to form chromosomes. The genes within these chromosomes are the cell's nuclear genome. The function of the nucleus is to maintain the integrity of these genes and to control the activities of the cell by regulating gene expression — the nucleus is, therefore, the control center of the cell. The main structures making up the nucleus are the nuclear envelope, a double membrane that encloses the entire organelle and separates its contents from the cellular cytoplasm, and the nuclear lamina, a meshwork within the nucleus that adds mechanical support, much like the cytoskeleton, which supports the cell as a whole. (Wikipedia)

(8) cytoplasm (細胞質)
The cytoplasm is a thick liquid residing between the cell membrane holding organelles, except for the nucleus. All the contents of the cells of prokaryote organisms (which lack a cell nucleus) are contained within the cytoplasm. Within the cells of eukaryote organisms the contents of the cell nucleus are separated from the cytoplasm, and are then called the nucleoplasm. In eukaryotic cells also, the cytoplasm contains organelles, such as mitochondria, which are filled with liquid that is kept separate from the rest of the cytoplasm by biological membranes. (Wikipedia)

(9) cell membrane (細胞膜)
The cell membrane is a biological membrane that separates the interior of all cells from the outside environment. The cell membrane is selectively- permeable to ions and organic molecules and controls the movement of substances in and out of cells. It consists of the phospholipid bilayer with embedded proteins. Cell membranes are involved in a variety of cellular processes such as cell adhesion, ion conductivity and cell signaling and serve as the attachment surface for the extracellular glycocalyx and cell wall and intracellular cytoskeleton. (Wikipedia)

(10) Tissue (組織)
Tissue is a cellular organizational level intermediate between cells and a complete organism. A tissue is an ensemble of cells, not necessarily identical, but from the same origin, that together carry out a specific function. Organs are then formed by the functional grouping together of multiple tissues. The study of tissue is known as histology or, in connection with disease, histopathology. The classical tools for studying tissues are the paraffin block in which tissue is embedded and then sectioned, the histological stain, and the optical microscope. (Wikipedia)
(11) Epithelium (上皮)
Epithelium is one of the four basic types of animal tissue, along with connective tissue, muscle tissue and nervous tissue. Epithelial tissues line the cavities and surfaces of structures throughout the body, and also form many glands. Functions of epithelial cells include secretion, selective absorption,

protection, transcellular transport and detection of sensation. It is composed of tightly clustered cells connected by tight junctions and desmosomes. Epithelial tissue is avascular, so it must receive nourishment via diffusion of substances from the underlying connective tissue, through the basement membrane. (Wikipedia)

(12) Connective tissue (結合組織)
Connective tissue is a fibrous tissue. It is one of the four traditional classes of tissues (the others being epithelial, muscle, and nervous tissue). Connective Tissue (CT) is found throughout the body. It has 3 main components; cells, fibers, and extracellular matrix. Connective tissue makes up a variety of physical structures including, tendons, blood, cartilage, bone, adipose tissue, and lymphatic tissue. (Wikipedia)

(13) Muscle tissue (筋組織)
Muscle is a contractile tissue of animals and is derived from the mesodermal layer of embryonic germ cells. Muscle cells contain contractile filaments that move past each other and change the size of the cell. They are classified as skeletal, cardiac, or smooth muscles. Their function is to produce force and cause motion. Muscles can cause either locomotion of the organism itself or movement of internal organs. Cardiac and smooth muscle contraction occurs without conscious thought and is necessary for survival. (Wikipedia)

(14) Nervous tissue (神経組織)
Nervous tissue is one of four major classes of vertebrate tissue. Nervous tissue is the main component of the nervous system - the brain, spinal cord, and nerves-which regulates and controls body functions. It is composed of neurons, which transmit impulses, and the neuroglia cells, which assist propagation of the nerve impulse as well as provide nutrients to the neuron. Nervous tissue is made of nerve cells that come in many varieties, all of which are distinctly characteristic by the axon or long stem like part of the cell that sends action potential signals to the next cell. (Wikipedia)

(15) organ (器官)
In biology and anatomy, an organ is a collection of tissues joined in structural unit to serve a common function. Usually there is a main tissue and sporadic tissues. The main tissue is the one that is unique for the specific organ. For example, main tissue in the heart is the myocardium, while sporadic are the nerves, blood, connective etc.. Functionally related organs often cooperate to form whole organ systems. Organs exist in all higher biological organisms, in particular they are not restricted to animals, but can also be identified in plants. An example of this is the bladder. (Wikipedia)

(16) Light microscopy (光学顕微鏡)
Optical or light microscopy involves passing visible light transmitted through or reflected from the sample through a single or multiple lenses to allow a magnified view of the sample. The resulting image can be detected directly by the eye, imaged on a photographic plate or captured digitally. The single lens with its attachments, or the system of lenses and imaging equipment, along with the appropriate lighting equipment, sample stage and support, makes up the basic light microscope. The most recent development is the digital microscope, which uses a CCD camera to focus on the exhibit of interest. (Wikipedia)

(17) Electron microscope (電子顕微鏡)
An electron microscope is a type of microscope that uses a particle beam of electrons to illuminate the specimen and produce a magnified image. Electron microscopes (EM) have a greater resolving power than a light- powered optical microscope, because electrons have wavelengths about 100,000 times shorter than visible light (photons), and can achieve better than 0.2 nm resolution and magnifications of up to 2,000,000x, whereas ordinary, non-confocal light microscopes are limited by diffraction to about 200 nm resolution and useful magnifications below 2000x. The electron microscope uses electrostatic and electromagnetic "lenses" to control the electron beam and focus it to form an image. (Wikipedia)

(18) Confocal laser scanning microscopy (共焦点レーザー顕微鏡)

Confocal laser scanning microscopy (CLSM) is a technique for obtaining high-resolution optical images with depth selectivity. The key feature of confocal microscopy is its ability to acquire in-focus images from selected depths, a process known as optical sectioning. Images are acquired point- by-point and reconstructed with a computer, allowing three-dimensional reconstructions of topologically complex objects. For opaque specimens, this is useful for surface profiling, while for non-opaque specimens, interior structures can be imaged. For interior imaging, the quality of the image is greatly enhanced over simple microscopy because image information from multiple depths in the specimen is not superimposed. (Wikipedia)

(19) Virtual microscopy (バーチャルスライド)
Virtual microscopy is a method of posting microscope images on, and transmitting them over, computer networks. This allows independent viewing of images by large numbers of people in diverse locations. It involves a synthesis of microscopy technologies and digital technologies. Prior to recent advances in virtual microscopy, slides were commonly digitized by various forms of film scanner and image resolutions rarely exceeded 5000 dpi. Nowadays, it is possible to achieve more than 100,000 dpi and thus resolutions approaching that visible under the optical microscope. (Wikipedia)

科目名:Molecular & Functional Imaging Technology (分子機能画像科学論)

【講義内容】
臨床の現場において現在広く用いられている PET、SPECT、CT、MRI などの量子線を用いた画像診断をさらに先端的に発展させて、生体分子 機能の画像化に用いる手法の基礎について理解し、分子機能画像の基礎的知識を習得する。また、一般単純撮影、マンモグラフィ、各種造影検 査などの形態画像を進歩的に利用する方法を理解し、分子機能画像との 相違や相補的関係の重要性などを通して検査法の意義と将来的な展開に ついて探求する。

Key Words:
(1) Molecular & functional imaging (分子機能画像)
Molecular Imaging emerged as a discipline at the intersection of molecular biology and in vivo imaging. It enables the visualisation of the cellular function and the follow-up of the molecular process in living organisms without perturbing them. The multiple and numerous potentialities of this field are applicable to the diagnosis of diseases. This technique also contributes to improving the treatment of these disorders by optimizing the pre-clinical and clinical tests of new medication. They are also expected to achieve earlier and more precise diagnosis. Both PET and SPECT are widely used as main technique of molecular imaging.

(2) Molecular probe, radiopharmaceutical (分子プローブ、放射性医薬品)
Radiopharmaceuticals are radioactive pharmaceuticals and are used in the field of nuclear medicine as tracers in the diagnosis and treatment of many diseases. They are called as molecular probes in a field of molecular imaging. Many radiopharmaceuticals are used for imaging and functional studies of the brain, myocardium, thyroid, lungs, liver, gallbladder, kidneys, skeleton, blood and tumors. Technically, however, many radiopharmaceuticals incorporate a radioactive tracer atom into a larger pharmaceutically-active molecule, which is localized in the body, after which the radionuclide tracer atom allows it to be easily detected with a gamma camera or similar gamma imaging device.

(3) PET (陽電子放射断層撮影法)
Positron emission tomography (PET) is a nuclear medicine imaging technique which produces a picture of functional processes in the body. The system detects pairs of gamma rays emitted indirectly by a positron- emitting radionuclide (tracer), which is introduced into the body on a biologically active molecule. Three-dimensional images of tracer concentration within the body are then constructed by computer analysis. In modern scanners, three dimensional imaging is often accomplished with the aid of a CT X-ray scan performed on the patient during the same session, in the same machine.

(4) FDG (フルオロデオキシグルコース)
F-18-fluorodeoxyglucose (FDG) is 2-deoxy-2-(18F)fluoro-D-glucose, a glucose analog, with the positron-emitting radioactive isotope fluorine-18 substituted for the normal hydroxyl group at the 2' position in the glucose molecule. After 18F-FDG is injected into a patient, a PET scanner can form images of the distribution of FDG around the body. The concentrations of tracer imaged then give tissue metabolic activity, in terms of regional glucose uptake. FDG-PET is widely used for the clinical diagnosis of oncology, cardiology and neurology.

(5) Methionine (メチオニン)
C-11-L-methyl-methionine (MET) is a kind of tracer molecules used in PET to image the amino acid metabolism of tissue. MET has been reported to be useful for evaluating brain tumors. MET uptake was correlated with the histological grade and useful for assessing tumor extent, but high MET uptake has also been reported in some non-tumoral lesions, such as cerebrovascular disease (CVD), brain abscesses or radiation necrosis. Recently, MET has also been reported to be useful for the diagnosis of various types of trunkal malignant tumors.

(6) FLT (フルオロチミジン)
3'-Deoxy-3'-[(18)F]fluorothymidine is a thymidine analogue. Its uptake is regulated by thymidine kinase 1, and it is therefore taken up preferentially by rapidly proliferating tumour tissue. The fluorine isotope 18 is a positron emitter that is used in positron emission tomography (PET). This marker is therefore useful for PET imaging of active tumour proliferation, and compares favourably with the more commonly used marker 2- [(18)F]fluoro-2-deoxy-D-glucose.

(7) PIB (ピッツバーグ化合物)
Pittsburgh compound B (PiB) is a fluorescent analog of thioflavin T, which can be used in positron emission tomography scans to image beta- amyloid plaques in neuronal tissue. Due to this property, Pittsburgh compound B may be used in investigational studies of Alzheimer's disease. The first PiB study of a human subject with a clinical diagnosis of Alzheimer's disease was conducted in February, 2002, at Uppsala University. PET scans showed that the compound was retained in areas of the cerebral cortex known to contain significant amyloid deposits from post-mortem examinations.

(8) SPECT (単光子放射断層撮影法)
Single photon emission computed tomography (SPECT) is a nuclear medicine tomographic imaging technique using gamma rays. The basic technique requires injection of a gamma-emitting radioisotope into the patient. Some radioisotopes have chemical properties which allow them to be concentrated in ways of medical interest for disease detection. Many radioisotopes have been attached to special radioligands, which are of interest for their chemical binding properties to certain types of tissues. These radiopharmaceuticals are carried and bound to a place of interest in the body and their concentration could be seen by a gamma-camera.

(9) Myocardial perfusion imaging (心筋血流 SPECT)
Myocardial perfusion imaging (MPI) is a kind of nuclear medicine tomographic imaging technique SPECT which is a form of functional cardiac imaging, used for the diagnosis of ischemic heart disease. Following a cardiac specific radiopharmaceutical is administered, the heart rate is raised to induce myocardial stress, either by exercise or pharmacologically. SPECT imaging performed after stress reveals the distribution of the radiopharmaceutical, and therefore the relative blood flow to the different regions of the myocardium. Diagnosis is made by comparing stress images to a further set of images obtained at rest.

(10) Brain perfusion SPECT (脳血流 SPECT)
Radiopharmaceuticals used for brain perfusion SPECT are taken up by brain tissue in a manner proportional to brain blood flow, in turn allowing brain blood flow to be assessed with the nuclear gamma camera. Because blood flow in the brain is tightly coupled to local brain metabolism and energy use, the gamma-emitting tracer is used to assess brain metabolism regionally, in an attempt to diagnose and differentiate the neurological disorders such as dementia, cerebrovascular diseases

and epilepsy.

(11) Diffusion-weighted MR imaging (拡散強調 MRI)
Diffusion-weighted MRI is a specific modality that produces in vivo images of biological tissues weighted with the local microstructural characteristics of water diffusion. Two gradient pulses with the same strength and opposite direction are applied before and after the 180° refocusing pulse on a spin-echo sequence. For static molecules, the phase shift is identical to that produced by the first pulse, so that pulses cancel each other out. On the other hand, for diffusing molecules the position changes between the two pulses, resulting in imperfect refocusing of echo and signal loss. Thus, the effects of motion and diffusion become visible with diffusion- weighted MRI.

(12) Contrast-enhanced dynamic MR imaging (DCE-MRI) (造影ダイナミック MRI)
DCE-MRI uses repeated imaging to track the entrance of diffusible contrast agents into tissue over time. A paramagnetic contrast agent, gadolinium-DTPA, is injected intravenously circulates through the body and diffuses over time into the extravascular extracellular space. As the mean contrast agent concentration within a voxel increases, the signal intensity from that voxel increases. From the known properties of the imaging sequences it is possible to convert the relative signal increase into a quantitative measure of contrast agent over time in tissue. From these curves we can obtain semiquantitative analogs of blood flow.

(13) Perfusion CT (潅流 CT)
The method by which perfusion to an organ measured by CT is still a relatively new concept. Practical CT perfusion as performed on modern CT scanners was developed, and it is commonly used in brain CT, sometimes in pancreas CT. Various mathematical models can then be used to process the raw temporal data to ascertain quantitative information such as rate of cerebral blood flow (CBF) following an ischemic stroke or aneurysmal subarachnoidal hemorrhage.

(14) Coronary CT angiography (冠動脈 CT アンギオグラフィ)
Advances in multidetector CT (MDCT) technology with submillimeter slice collimation and high temporal resolution permit contrast-enhanced imaging of coronary arteries and coronary plaque during a single breath hold. Recent studies have suggested that 64-slice coronary CT angiography is highly accurate for the exclusion of significant coronary artery stenosis (.50% luminal narrowing), with negative predictive values of 97%–100%, in comparison with invasive selective coronary angiography.

(15) Myocardial perfusion MR imaging (心筋潅流 MRI)
Dynamic MRI with a bolus injection of contrast material enables assessment of first-pass myocardial enhancement during pharmacologic stress, which can provide information regarding the presence and extent of coronary artery disease. In recent studies using hybrid echo-planar MRI sequences, stress perfusion MRI showed a sensitivity of 87-90% and specificity of approximately 85% when coronary angiography was used as a gold standard. In addition, the enhancement at dynamic MRI during stress correlated more closely with coronary angiographic results than stress SPECT findings in patients without myocardial infarction.

科目名:Quantum Radiation Therapeutics (量子線治療科学論)

Course Description: Quantum radiation therapeutics is one of basic sciences for use in clinical oncology, especially for cancer treatment. This covers radiation biology of cancer cells and normal cells, pathology and radiotherapy planning. We study how more doses can be delivered to cancer and how fewer doses can be given to normal tissue from the view point of dose distribution and fractionation. Furthermore we are going to refer particle therapy as well as photon therapy.

Key Words:
(1) Radiotherapy (放射線治療)
Radiotherapy is one of the major treatment methods of cancer patients. There are external radiotherapy (teletherapy) and internal radiotherapy (brachytherapy).

External radiotherapy technique is advancing in correlation with computer radiotherapy planning and irradiation technique

(2) Radiation biology (放射線生物学)
Radiation biology is a study about radiation effects on cell, tissue, organ and body. Relationship between biological effects and radiation dose is important in this research

(3) Clinical oncology (臨床腫瘍学)
Clinical oncology covers diagnosis and therapeutics of malignant tumors as well as etiology and pathology. It has three main fields, medical oncology surgical oncology and radiation oncology

(4) Photon therapy (光子線治療)
Current radiotherapy using X ray and γ ray is a photon therapy. These rays are low LET radiation and it's RBE is 1. A lot of irradiation techniques have been invented such as IMRT IGRT and 3DCRT.

(5) Particle therapy (粒子線治療)
Nowadays proton beam and carbon beam therapy are available. These high LET radiation beams have advantage in dose distribution and LET. This means more effective killing of cancer cells and less toxicity of normal tissue. Strong clinical effect is expected in this therapy.

科目名:Fundamentals of electro-magnetic wave (基礎電磁波論)

Key words:
Maxwell's equations (マックスウェル方程式), Micro-wave (マイクロ波), Wave guide (導波管), Wave mode (波動モード), Distributed constant circuit (分布定数回路)

Course Description: This course explores the fundamentals of electromagnetic waves, especially of micro-waves based on classical electromagnetism culminating in wireless and optical communications, circuits, and medical applications. Fundamentals include: Maxwell's equations, basic concepts of electromagnetic waves (wavelength, frequency, phase velocity etc.), waveguides and the wave modes in the wave guides, and distributed constant circuits.

科目名:Medical Image and Information Sciences (医用画像情報科学論)

Key Words:
(1) Digital image (デジタル画像)
A digital image is a representation of a two-dimensional image using ones and zeros (binary). Depending on whether or not the image resolution is fixed, it may be ofvector or raster type. Without qualifications, the term "digital image" usually refers to raster images also called bitmap images.

(2) Image analysis (画像解析)
Image analysis is the extraction of meaningful information from images; mainly from digital images by means of digital image processing techniques. Image analysis tasks can be as simple as reading bar coded tags or as sophisticated as identifying a person from their face.

(3) CAD (コンピュータ支援診断)
Computer-aided diagnosis (CAD) is a procedure in medicine that assist doctors in the interpretation of medical images. Imaging techniques in X- ray, MRI, and Ultrasound diagnostics yield a great deal of information, which the radiologist has to analyze and evaluate comprehensively in a short time. CAD systems help scan digital images, e.g. from computed tomography, for typical appearances and to highlight conspicuous sections, such as possible diseases.

(4) Digital image processing (デジタル画像処理)
Digital image processing is the use of computer algorithms to perform image processing on digital

images. As a subcategory or field of digital signal processing, digital image processing has many advantages over analog image processing. It allows a much wider range of algorithms to be applied to the input data and can avoid problems such as the build-up of noise and signal distortion during processing.

(5) PACS (パックス)
In medical imaging, "electronic picture archiving and communication systems (PACS) have been developed in an attempt to provide economical storage, rapid retrieval of images, access to images acquired with multiple modalities, and simultaneous access at multiple sites". Electronic images and reports are transmitted digitally via PACS; this eliminates the need to manually file, retrieve, or transport film jackets.

(6) DICOM (ダイコム)
Digital Imaging and Communications in Medicine (DICOM) is a standard for handling, storing, printing, and transmitting information in medical imaging. It includes a file format definition and a network communications protocol. The communication protocol is an application protocol that uses TCP/IP to communicate between systems. DICOM files can be exchanged between two entities that are capable of receiving image and patient data in DICOM format.

(7) Pattern recognition (パターン認識)
In machine learning, pattern recognition is the assignment of some sort of output value (or label) to a given input value (or instance), according to some specific algorithm. An example of pattern recognition is classification, which attempts to assign each input value to one of a given set of classes (for example, determine whether a given email is "spam" or "non-spam").

(8) Information mathematics (画像数学)
In mathematics, the image of a subset of a function's domain under (or through) the function is the set of all outputs obtained when the function is evaluated at each element of the subset. The inverse image or preimage of a particular subset S of the codomain of a function is the set of all elements of the domain that map to the members of S.

科目名:Information Theory for Medical Physics (医学物理情報理論)

Key Words:
(1) Pattern Recognition (パターン認識)
Pattern recognition is the act of extracting features from some objects in raw data and making a decision based on the classifier output such as classifying each object into one of the possible categories of various patterns. The computer-aided diagnosis system and image guided radiation therapy are two of pattern recognition applications in radiological field.

(2) Machine Learning (機械学習)
Machine learning is one of pattern recognition techniques, and supervised machine learning allows the computer program to learn how to accomplish a task by following examples provided by a learning algorithm. Prior to the practical test, the classifier should be designed by inputting feature values from training cases, and teaching the classifier true category labels (e.g., one or zero). This learning method is called, “supervised learning.”

(3) Bayes' theorem (ベイズ理論)
Bayes' theorem in an equation, $p(Y|X)=p(X|Y)p(Y)/p(X)$ gives a mathematical representation of how the conditional probability of event Y given X is related to the converse conditional probability of X given Y, which is called likelihood. We can state Bayes' Theorem in words that posterior probability $p(Y|X)$ is proportional to the likelihood $p(X|Y)$ multiplied by the prior probability $p(Y)$. This theory plays a central role in pattern recognition and machine learning. Maximum a posteriori (MAP) inference is a technique for maximizing the posterior probability $p(Y|X)$, which is applied to image segmentation using a probabilistic atlas. On the other hand, the maximum likelihood is a method for maximizing the likelihood $p(X|Y)$.

(4) Probability Theory (確率理論)
Probability theory is the branch of mathematics concerned with analysis of random phenomena. The central objects of probability theory are random variables, stochastic processes, and events: mathematical abstractions of non-deterministic events or measured quantities that may either be single occurrences or evolve over time in an apparently random fashion. A key concept in the field of pattern recognition is that of uncertainty. It arises both through noise on measurements, as well as through the finite size of data sets. Probability theory provides a consistent framework for the quantification and manipulation of uncertainty and forms one of the central foundations for pattern recognition.

(5) Neural Network (ニューラルネットワーク)
An artificial neural network (ANN) is one of machine learning classifiers and a computational model simulating neural networks in the human brain. The ANN can learn the relationship between input data and teaching data. In other words, a mathematical model representing the relationship between input data and teaching data can be constructed by changing weighting factors connecting between neurons in the ANN in a learning stage.

(6) Kernel Methods (カーネル法)
Kernel method is a class of algorithms for pattern analysis, whose best known example is the support vector machine (SVM). The SVM is one of kernel methods for discriminating objects by non-linearly mapping the feature vectors of the objects into a high dimensional feature space. In that space, a variety of methods can be used to find relations in the data. The concept of a kernel formulated as an inner product in a feature space allows us to build interesting extensions of many well-known algorithms by making use of the kernel trick.

(7) Clustering (クラスタリング)
Clustering is to classify objects into specific classes based on a feature space without any corresponding teacher data. The clustering is one of unsupervised learning problems, which may be to discover groups of similar examples within the data. The examples of clustering techniques are k-nearest neighbor (k-NN) algorithm and fuzzy C-means (FCM).

(8) Information Theory (情報理論)
Information theory is to find fundamental limits on signal processing operations such as compressing data and on reliably storing and communicating data. A key measure of information is known as entropy, which is usually expressed by the average number of bits needed for storage or communication. Entropy quantifies the uncertainty involved in predicting the value of a random variable.

(9) Curse of Dimensionality (次元の呪い)
The basic idea of the curse of dimensionality is that high dimensional data is difficult to work with for several reasons: (1) Adding more features can increase the noise, and hence the error, (2) There aren't enough observations to get good estimates, (3) Most of the data is in the tails. We should consider the curse of dimensionality, which causes the problem that classification performances of the pattern recognition (e.g. CAD) systems could deteriorate if the ratio of the number of training cases to that of features used for the classifier is relatively small. A ratio of more than 5 or 10 would be better for avoiding the curse of dimensionality.

(10) Computer-Aided Diagnosis (CAD) (コンピュータ支援診断)
The basic concept of CAD was proposed by The University of Chicago, in the mid-1980s, whose idea it was to provide a computer output as a "second opinion" to assist radiologists in interpreting images, so that the accuracy and consistency of radiological diagnosis could be improved, and also the image reading time could be reduced. In general, there are two types of CAD systems. One CAD system is for classifying all candidates into abnormal and normal candidates such as intracranial aneurysms or white matter hyperintensities in MR images, i.e., two-class categorization system. The other is a CAD system for classification of unknown cases into several types of abnormalities, which are more than

two, i.e., multi-class categorization system.

(11) Image Guided Radiation Therapy (IGRT) (画像誘導放射線治療)
Image-guided radiation therapy (IGRT) is the process of frequent two and three-dimensional imaging, during a course of radiation treatment. Orthogonal megavoltage and kilovoltage imaging, with or without fiducial markers, can decrease patient setup error and required target-volume margins. Developments in medical imaging are integral to radiation oncology, both for design of treatment plans and to localize the target for precise administration of radiation. At planning, definition of the tumor and healthy tissue is based on CT, augmented frequently with MRI and PET. At treatment, three-dimensional soft-tissue imaging can also be used to localize the target and tumor motion can be tracked with fluoroscopic imaging of radio-opaque markers implanted in or near the tumor.

(12) Medical Image Processing (医用画像処理)
Medical image processing is a process for improving image quality, enhancing specific objects, segmenting specific regions, etc, for assisting physicians in diagnosis of patients. Medical image processing plays an important role in the CAD and IGRT in finding lesion candidates or specific objects at medical images. The general pattern recognition systems consist of preprocessing, image enhancement, image segmentation, image feature extraction, which are image processing techniques.

(13) Feature Extraction (特徴量抽出)
The aim of the image feature analysis or feature extraction is to characterize an object (lesion or anatomical structure) to be recognized by measurements based on a segmented region, whose values are very similar to those for objects in the same category, but as different or distinguishable as possible from those for objects in different categories. The feature extraction is one of the main steps for pattern recognition systems, but there is no “royal road” to extracting features in the CAD field as well as the pattern recognition field. That is because each method for feature extraction depends on each object (lesion) in each medical image. Consequently, a number of feature extraction methods have been developed for specific lesions.

(14) Classification (識別)
Classification is performed by using machine learning techniques such as neural networks or kernel methods. In the classification process in medicine, the feature vector of each lesion candidate provided by a feature extractor is used for assigning the candidate to one of the possible categories (e.g. lesions or anatomical structures, or true positive, false positive) according to the output of a classifier. Classification accuracy of the machine learning substantially depends on image feature extraction including the segmentation.

(15) Segmentation (セグメンテーション,領域分割)
*S*egmentation is to distinguish specific objects from background in an image. Popular segmentation methods are threshold techniques, edge- based methods, region-based techniques, and active contour models. The examples of threshold techniques are an Otsu-automated thresholding technique based on linear discriminant analysis and a region growing technique. Robust segmentation techniques are said to be active contour models such as snakes and level set methods.

(16) Image Registration (画像位置合わせ)
Image registration is one of image processing techniques to register an object in a moving image with the other similar object in a reference image. Here, the moving image is defined as an image to be deformed so that the moving image can be similar to the reference image to be fixed. The goal of the image registration is to relate any feature points in the moving image to those in the reference image so that these objects can be similar to each other, i.e., to determine an optimal transformation, which maps any feature points within the moving image into its corresponding points within the reference image. One of examples of the linear registration techniques is an affine transformation, and one of non-linear registration techniques is a free form deformation.

(17) Expectation Maximization (EM) Algorithm (期待値最大化アルゴリズム)

Expectation maximization (EM) algorithm is an optimization method to estimate unknown parameters in some stochastic models based on maximum likelihood estimation. The EM is an iterative method which alternates between performing an expectation (E) step, which computes the expectation of the log-likelihood evaluated using the current estimate for the latent variables, and a maximization (M) step, which computes parameters maximizing the expected log-likelihood found on the E step. These parameter-estimates are then used to determine the distribution of the latent variables in the next E step.

(18) Statistical Shape Analysis (統計的形状解析)
Statistical shape analysis is a geometrical analysis from a set of shapes in which statistics are measured to describe geometrical properties from similar shapes or different groups, for instance, the difference in
hippocampal shape with and without Alzheimer's disease, etc. Some of the important aspects of shape analysis are to obtain a measure of distance between shapes, to estimate average shapes from a (possibly random) sample and to estimate shape variability in a sample. One of the main methods used is principal component analysis.

(19) Computer Graphics (コンピュータグラフィックス)
Computer graphics is a digital processing technique for producing two- or three-dimensional images in a virtual space. The role of this technique in medicine makes us more concretely to understand lesions and anatomical regions as they are in a patient's body. Computer graphics is used for simulating treatment plan in radiation therapy, where a tumor region and organs at risk are segmented, and then the beam angle and dose distributions are visually determined in three-dimensional graphical space.

(20) Optimization Methods (最適化法)
Optimization method is one for finding a solution by minimizing or maximizing an objective function under a constraint condition. The examples of this technique are steepest descent, simplex algorithm, and simulated annealing. These algorithms are used for optimization of neural networks, image registration, and active contour models.

科目名:Medical image science (医用画像科学論)

【講義内容】
Radiology, Medical Physics, Academic Radiology, Physics and Biology in Medicine などの国際雑誌に掲載された論文を中心に、医用画像の形成 理論と特徴、X 線画像における患者被ばく線量低減の考え方、コンピュ ータ支援診断などについて学習する. (1)イントロダクション(医用画 像の形成、物理) (2) 医用

医用画像の基礎的画像特性 (3) 医用画像の視覚特 性 (4) 乳房画像の画像特性と検出 (5) 平面検出器の基礎的画像特性 (6) 観 察系の基礎的画像特性 (7) コンピュータ支援診断の臨床応用

Key Words:
(1) Image formation of medical imaging
(2) Basic imaging properties of x-ray imaging
(3) Characteristics of the human visual system and observer performance
(4) Imaging properties and detection of microcalcifications and masses in mammogram
(5) Basic imaging properties of flat-panel detector
(6) Characteristics of electronic display devices
(7) Computer-aided diagnosis

科目名:Image Analysis for Microscopic Examination (組織画像検査学論)

Key Words:

(1) morphology (形態学)

In biology, morphology is a branch of bioscience dealing with the study of the form and structure of organisms and their specific structural features. This includes aspects of the outward appearance (shape, structure, colour, pattern) as well as the form and structure of the internal parts like bones and organs. This is in contrast to physiology, which deals primarily with function. Morphology is a branch of life science dealing with the study of gross structure of an organism or Taxon and its component parts. (Wikipedia)

(2) Microscopy (顕微鏡)

Microscopy is the technical field of using microscopes to view samples and objects that cannot be seen with the unaided eye (objects that are not within the resolution range of the normal eye). There are three well-known branches of microscopy, optical, electron, and scanning probe microscopy. Optical and electron microscopy involve the diffraction, reflection, or refraction of electromagnetic radiation/electron beams interacting with the specimen, and the subsequent collection of this scattered radiation or another signal in order to create an image. The development of microscopy revolutionized biology and remains an essential technique in the life and physical sciences. (Wikipedia)

(3) Light microscopy (光学顕微鏡)

Optical or light microscopy involves passing visible light transmitted through or reflected from the sample through a single or multiple lenses to allow a magnified view of the sample. The resulting image can be detected directly by the eye, imaged on a photographic plate or captured digitally. The single lens with its attachments, or the system of lenses and imaging equipment, along with the appropriate lighting equipment, sample stage and support, makes up the basic light microscope. The most recent development is the digital microscope, which uses a CCD camera to focus on the exhibit of interest. (Wikipedia)

(4) Electron microscope (電子顕微鏡)

An electron microscope is a type of microscope that uses a particle beam of electrons to illuminate the specimen and produce a magnified image. Electron microscopes (EM) have a greater resolving power than a light- powered optical microscope, because electrons have wavelengths about 100,000 times shorter than visible light (photons), and can achieve better than 0.2 nm resolution and magnifications of up to 2,000,000x, whereas ordinary, non-confocal light microscopes are limited by diffraction to about 200 nm resolution and useful magnifications below 2000x. The electron microscope uses electrostatic and electromagnetic "lenses" to control the electron beam and focus it to form an image. (Wikipedia)

(5) Confocal laser scanning microscopy (共焦点レーザー顕微鏡)

Confocal laser scanning microscopy (CLSM) is a technique for obtaining high-resolution optical images with depth selectivity. The key feature of confocal microscopy is its ability to acquire in-focus images from selected depths, a process known as optical sectioning. Images are acquired point- by-point and reconstructed with a computer, allowing three-dimensional reconstructions of topologically complex objects. For opaque specimens, this is useful for surface profiling, while for non-opaque specimens, interior structures can be imaged. For interior imaging, the quality of the image is greatly enhanced over simple microscopy because image information from multiple depths in the specimen is not superimposed. (Wikipedia)

(6) Virtual microscopy (バーチャルスライド)

Virtual microscopy is a method of posting microscope images on, and transmitting them over, computer networks. This allows independent viewing of images by large numbers of people in diverse locations. It involves a synthesis of microscopy technologies and digital technologies. Prior to recent advances in virtual microscopy, slides were commonly digitized by various forms of film scanner and image resolutions rarely exceeded 5000 dpi. Nowadays, it is possible to achieve more than 100,000 dpi and thus resolutions approaching that visible under the optical microscope. (Wikipedia)

(7) Immunohistochemistry (免疫組織化学)
Immunohistochemistry (IHC) refers to the process of detecting antigens in cells of a tissue section by exploiting the principle of antibodies binding specifically to antigens in biological tissues. Immunohistochemical staining is widely used in the diagnosis of abnormal cells such as those found in cancerous tumors. Specific molecular markers are characteristic of particular cellular events such as proliferation or cell death. IHC is also widely used in basic research to understand the distribution and localization of biomarkers and differentially expressed proteins in different parts of a biological tissue. Visualising an antibody-antigen interaction can be accomplished in a number of ways. (Wikipedia)
(
8) Stereology (ステレオロジー)
Stereology was originally defined as "the spatial interpretation of sections". It is an interdisciplinary field that is largely concerned with the three- dimensional interpretation of planar sections of materials or tissues. It provides practical techniques for extracting quantitative information about a three-dimensional material from measurements made on two- dimensional planar sections of the material. Stereology is a method that utilizes random, systematic sampling to provide unbiased and quantitative data. It is an important and efficient tool in many applications of microscopy (such as petrography, materials science, and biosciences including histology, bone and neuroanatomy). (Wikipedia)

(9) Disector
The Disector is used to count objects in 3 dimensions. The Disector uses the counting frame and extends the set of counting rules to count objects in two adjacent sections. In fact, the term Disector comes from the composition of the terms *di* for two and *section*. The two sections must be close enough so that it is possible to infer what lies between the two sections. This makes it possible to use the Disector to sample volume. (stereology.imfo)

(10) Fractionator
A systematic random sampling method that selects a portion of a region of interest. The fractionator principle is used in many areas of design-based stereology. Fractionator based sampling schemes are unbiased. The fractionator principle is one of the important concepts used in stereology. The importance of this principle cannot be overlooked. It appears in many different places. Although it looks different depending on how it is used, the principle is the same. (stereology.imfo)

(11) ImageJ
ImageJ is a public domain, Java-based image processing program developed at the National Institutes of Health. ImageJ was designed with an open architecture that provides extensibility via Java plugins and recordable macros. Custom acquisition, analysis and processing plugins can be developed using ImageJ's built-in editor and a Java compiler. User-written plugins make it possible to solve many image processing and analysis problems, from three-dimensional live-cell imaging, to radiological image processing, multiple imaging system data comparisons to automated hematology systems. ImageJ's plugin architecture and built in development environment has made it a popular platform for teaching image processing. (Wikipedia)

(12) cell (細胞)
The cell is the functional basic unit of life. It was discovered by Robert Hooke and is the functional unit of all known living organisms. It is the smallest unit of life that is classified as a living thing, and is often called the building block of life. Some organisms, such as most bacteria, are unicellular (consist of a single cell). Other organisms, such as humans, are multicellular. Humans have about 100 trillion or 1014 cells; a typical cell size is 10 μm and a typical cell mass is 1 nanogram. (Wikipedia)

(13) nucleus (核)
In cell biology, the nucleus (pl. nuclei; from Latin nucleus or nuculeus, meaning kernel) is a membrane-enclosed organelle found in eukaryotic cells. It contains most of the cell's genetic material, organized as multiple long linear DNA molecules in complex with a large variety of proteins, such as histones, to form chromosomes. The genes within these chromosomes are the cell's nuclear genome.

The function of the nucleus is to maintain the integrity of these genes and to control the activities of the cell by regulating gene expression — the nucleus is, therefore, the control center of the cell. The main structures making up the nucleus are the nuclear envelope, a double membrane that encloses the entire organelle and separates its contents from the cellular cytoplasm, and the nuclear lamina, a meshwork within the nucleus that adds mechanical support, much like the cytoskeleton, which supports the cell as a whole. (Wikipedia)

(14) cytoplasm (細胞質)
The cytoplasm is a thick liquid residing between the cell membrane holding organelles, except for the nucleus. All the contents of the cells of prokaryote organisms (which lack a cell nucleus) are contained within the cytoplasm. Within the cells of eukaryote organisms the contents of the cell nucleus are separated from the cytoplasm, and are then called the nucleoplasm. In eukaryotic cells also, the cytoplasm contains organelles, such as mitochondria, which are filled with liquid that is kept separate from the rest of the cytoplasm by biological membranes. (Wikipedia)

(15) cell membrane (細胞膜)
The cell membrane is a biological membrane that separates the interior of all cells from the outside environment. The cell membrane is selectively- permeable to ions and organic molecules and controls the movement of substances in and out of cells. It consists of the phospholipid bilayer with embedded proteins. Cell membranes are involved in a variety of cellular processes such as cell adhesion, ion conductivity and cell signaling and serve as the attachment surface for the extracellular glycocalyx and cell wall and intracellular cytoskeleton. (Wikipedia)

(16) Tissue (組織)
Tissue is a cellular organizational level intermediate between cells and a complete organism. A tissue is an ensemble of cells, not necessarily identical, but from the same origin, that together carry out a specific function. Organs are then formed by the functional grouping together of multiple tissues. The study of tissue is known as histology or, in connection with disease, histopathology. The classical tools for studying tissues are the paraffin block in which tissue is embedded and then sectioned, the histological stain, and the optical microscope. (Wikipedia)

(17) Epithelium (上皮)
Epithelium is one of the four basic types of animal tissue, along with connective tissue, muscle tissue and nervous tissue. Epithelial tissues line the cavities and surfaces of structures throughout the body, and also form many glands. Functions of epithelial cells include secretion, selective absorption, protection, transcellular transport and detection of sensation. It is composed of tightly clustered cells connected by tight junctions and desmosomes. Epithelial tissue is avascular, so it must receive nourishment via diffusion of substances from the underlying connective tissue, through the basement membrane. (Wikipedia)

(18) Connective tissue (結合組織)
Connective tissue is a fibrous tissue. It is one of the four traditional classes of tissues (the others being epithelial, muscle, and nervous tissue). Connective Tissue (CT) is found throughout the body. It has 3 main components; cells, fibers, and extracellular matrix. Connective tissue makes up a variety of physical structures including, tendons, blood, cartilage, bone, adipose tissue, and lymphatic tissue. (Wikipedia)

(19) Muscle tissue (筋組織)
Muscle is a contractile tissue of animals and is derived from the mesodermal layer of embryonic germ cells. Muscle cells contain contractile filaments that move past each other and change the size of the cell. They are classified as skeletal, cardiac, or smooth muscles. Their function is to produce force and cause motion. Muscles can cause either locomotion of the organism itself or movement of internal organs. Cardiac and smooth muscle contraction occurs without conscious thought and is necessary for survival. (Wikipedia)

(20) Nervous tissue (神経組織)

Nervous tissue is one of four major classes of vertebrate tissue. Nervous tissue is the main component of the nervous system - the brain, spinal cord, and nerves-which regulates and controls body functions. It is composed of neurons, which transmit impulses, and the neuroglia cells, which assist propagation of the nerve impulse as well as provide nutrients to the neuron. Nervous tissue is made of nerve cells that come in many varieties, all of which are distinctly characteristic by the axon or long stem like part of the cell that sends action potential signals to the next cell. (Wikipedia)

Medical Technology

検査技術科学分野キーワード

《検査技術科学分野》キーワード集

英文用語解説(全分野アルファベット順)

Index	英語用語	解説
A	acquired immunity	獲得免疫
	acute hemorrhagic conjunctivitis	急性出血性結膜炎
	acute reactive protein	急性期反応蛋白
	acute viral infection	急性ウイルス感染
	adaptive immunity	適応免疫
	aerial hypha	気中菌糸
	agar plate medium	寒天平板培地
	airborne transmission	空気感染
	allergy	アレルギー
	allogeneic	同種
	amebiasis	アメーバ症
	Amino acid	アミノ酸
	anal swab	肛囲検査
	anemia	貧血
	animal virus	動物ウイルス
	anisakiasis	アニサキス症
	antibody	抗体
	anticoagulant	抗凝固剤
	antigen presentation	抗原提示
	asexual spore	無性胞子
	autoantibody	自己抗体
	autoclave	オートクレーブ
	autoimmune regulator (AIRE) gene	自己免疫調節遺伝子
	autoimmunity	自己免疫
	autoinfection	自家感染
	autosomal	常染色体(性)の
B	B cell	B 細胞
	base pair	塩基対
	basophilic	好塩基性の
	BCR(B cell receptor)	B 細胞受容体
	benign	良性の
	biofilm	バイオフィルム
	biopsy	生検
	biotype	生物型
	black water fever	黒水熱
	blood film	血液塗抹標本
	blood sampling	採血
	blood transfusion	輸血
	blood type	血液型
	bone marrow	骨髄
	bone marrow aspiration	骨髄穿刺検査
	bone marrow transplantation	骨髄移植
	buffy coat	白血球層
C	capsid	カプシッド

	capsule	莢膜
	Carbohydrate	糖質
	carcinoma	癌腫
	Catalyst	触媒
	cell wall	細胞壁
	certified reference material	認証標準物質
	cestode, tapeworm	条虫
	Chemical kinetics	反応速度論
	chemokine	ケモカイン
	chicken pox	水痘
	Cholesterol	コレステロール
	chromosome	染色体
	chronic infection	慢性感染
	chyluria	乳糜尿
	circumoval precipitin test	卵周囲沈降テスト
	clamp connection	かすがい連結
	coagulation	凝固
	coccus	球菌
	coding region	翻訳領域, コード領域
	codon	コドン
	complement	補体
	complete blood count	血球数測定検査
	consensus method	常用標準法
	contact hypersensitivity	接触過敏症
	contact infection	接触感染
	contamination	汚染
	cord blood	臍帯血
	creeping eruption	皮膚爬行症
	cuboidal	立方状の
	cutaneous larva migrans	皮膚幼虫移行症
	cytokine	サイトカイン
	cytotoxic T cell	細胞傷害性 T 細胞
D	definitive host	固有宿主
	deletion	欠失
	delyed type hypersensitivity	遅延型過敏症
	dendritic cell	樹状細胞
	dermatophytosis	皮膚糸状菌症
	diploidy	2倍体
	disinfection	消毒
	disk diffusion method	ディスク拡散法
E	echymoses	斑状皮下出血
	EIA (Enzyme Immunoassay)	酵素免疫測定法
	Electron transport chain	電子伝達系
	elephantiasis	象皮病
	embedding	包埋
	embryonated egg	幼虫包蔵卵
	end point assay	終点分析法
	endotoxin	内毒素
	enzymatic assay	酵素的測定法
	Enzyme	酵素
	eosinophilia	好酸球増加症
	eosinophilic	好酸性の

	eosinophilic granuloma	好酸球性肉芽腫
	epitope	エピトープ(抗原決定基)
	Epstein-Barr virus	EBウイルス(エプスタイン バー ウイ ルス)
	erratic parasitism	迷入
	erythrocytic schizogony	赤血球内発育
	exotoxin	外毒素
F	Fatty acid	脂肪酸
	feces	糞便
	final host	終宿主
	FISH	fluorescent in situ hybridization
	flowcytometry	自動細胞解析装置
	free living	自由生活
	fungus	真菌
G	gene product	遺伝子産物
	gene targeting	標的遺伝子組換え
	gene therapy	遺伝子治療
	genotype	遺伝子型
	germline	生殖系列
	Gluconeogenesis	糖新生
	Glycolysis	解糖系
	Gram stain	グラム染色
H	H.E.	ヘマトキシリンエオジン
	helminth	蠕虫
	hematopoietic stem cell	造血幹細胞
	hemolysis	溶血
	heterotopic parasitism	異所寄生
	heterozygote	ヘテロ接合体
	histiocyte	組織球
	homologous	相同的な
	homozygote	ホモ接合体
	horizontal infection	水平感染
	human immunodeficiency virus	ヒト免疫不全ウイルス
	hybridization	ハイブリッド形成(法)
	hydrocele	陰嚢水腫
I	identification	同定
	immunoglobulin	免疫グロブリン
	immunohistochemistry	免疫組織化学
	infective larva	感染幼虫
	inflammation	炎症
	interleukin	インターロイキン
	intermediate host	中間宿主
	invasion	浸潤
J	Janus kinase	ジャックキナーゼ
K	karyotype analysis	染色体分析
	Koplik spot	コプリック斑
L	larva migrans	幼虫移行症
	latent infection	潜伏感染
	leukemia	白血病
	life cycle	生活史
	Lipid	脂質
	live vaccine	生ワクチン
	Loffler's syndrome	レフレル症候群

	lymphocyte	リンパ球
	lymphoma	リンパ腫
M	major histocompatibility complex	主要組織適合性抗原
	malignant	悪性の
	mast cell	マストセル、肥満細胞
	measurement system	測定体系
	Metabolism	代謝
	metastasis	転移
	metrological traceability chain	計量学的トレーサビリティ連鎖
	minimum inhibitory concentration	最小発育阻止濃度
	mitosis	有糸分裂
	monosomy	モノソミー、一染色体性
	mucoid colony	ムコイド集落
	mycotoxin	カビ毒
	myeloma	骨髄腫
N	natural immunity	自然免疫
	natural Killer (NK) cell	ナチュラルキラー細胞
	negative stain	陰性染色
	nematoda	線虫
O	Oxidative Phosphorylation	酸化的リン酸化
P	parasite	寄生虫
	parasitemia	虫血症
	pattern recoginition receptor	パターン認識受容体
	persistent infection	持続感染
	petechiae	点状皮下出血
	phenotype	表現型
	picnosis	核濃縮
	placental infection	胎盤感染
	plasma	血漿
	plasma cell	形質細胞
	platelet	血小板
	pleomorphism	多形性
	point mutation	点突然変異
	primary reference material	一次標準物質
	primary reference measurement procedure	一次基準測定操作法
	Protein	タンパク質
	protozoa	原虫
Q	quality assurance	精度保証
	quantitative PCR	定量的 PCR
R	rate assay	速度分析法
	RBC	Red blood cell: 赤血球
	Reduction / Oxidation = Redox	酸化還元
	reference material	標準物質
	reference measurement standard	参照測定標準物質
	reference standard	常用参照標準物質
	regulatory T cell	制御性 T 細胞
	reservoir host	保虫宿主
	Respiratory chain	呼吸鎖
	restriction enzyme	制限酵素
	reticulocyte	網状赤血球
	reverse transcriptase	逆転写酵素
S	sarcoma	肉腫

	secondary reference material	二次標準物質
	secondary reference measurement procedure	二次基準測定操作法
	serum	血清
	serum iron	血清鉄
	sexual spore	有性胞子
	sexually transmitted disease, STD	性感染症
	skin snip	皮膚切除
	spindle	紡錘形の
	splenomegaly	脾腫
	standard precautions	標準予防策
	standardization	標準化
	Substrate	基質
T	T cell	T 細胞
	TCR (T cell receptor)	T 細胞受容体
	thymus	胸腺
	TIBC	total iron binding capacity: 総鉄結合 能
	tissue-specific expression	組織特異的発現
	toll like receptor	トール様受容体
	transcription	転写
	tranferability	伝達性
	transgenic mouse	遺伝子導入マウス
	translation	翻訳
	translocation	転座
	trematoda	吸虫
	Triacylglycerol	トリアシルグリセロール
	Tricarboxylic-acid cycle = Citric acid cycle	トリカルボン酸回路=クエン酸回路
	trisomy	トリソミー、三染色体性
	trueness	真度
	tumor	腫瘍
	tumor necrosis factor	腫瘍壊死因子
U	UIBC	unbound iron binding capacity: 不飽和 鉄結合能
	uncertainty	不確かさ
	undefinitive host	非固有宿主
	untranslated region	非翻訳領域
	Urea cycle	尿素回路
V	validation	妥当性確認
	visceral larva migrans	内蔵幼虫移行症
W	WBC	white blood cell: 白血球
X	xenogeneic	異種
Z	zoonosis	人畜共通感染症

Laboratory Hematology（血液検査学）

英語用語	解説
allogeneic	同種
anemia	貧血
anticoagulant	抗凝固剤
blood film	血液塗抹標本
blood sampling	採血
blood transfusion	輸血
blood type	血液型
bone marrow	骨髄
bone marrow aspiration	骨髄穿刺検査
bone marrow transplantation	骨髄移植
buffy coat	白血球層
chromosome	染色体
coagulation	凝固
complete blood count	血球数測定検査、通常は赤血球数, Ht, Hb, 網 状赤血球数、白血球数、白血球分類、血小板 数がセットになっている。
cord blood	臍帯血
diploidy	2倍体
echymoses	斑状皮下出血
FISH	fluorescent in situ hybridization
flowcytometry	自動細胞解析装置
hematopoietic stem cell	造血幹細胞
hemolysis	溶血
karyotype analysis	染色体分析
leukemia	白血病
lymphoma	リンパ腫
monosomy	モノソミー、一染色体性
myeloma	骨髄腫
petechiae	点状皮下出血
plasma	血漿
platelet	血小板
RBC	Red blood cell: 赤血球
reticulocyte	網状赤血球
serum	血清
serum iron	血清鉄
TIBC	total iron binding capacity: 総鉄結合能
translocation	転座
trisomy	トリソミー、三染色体性
UIBC	unbound iron binding capacity: 不飽和鉄結合 能
WBC	white blood cell: 白血球
xenogeneic	異種

Clinical Chemistry（臨床化学）

英語用語	解説
quality assurance	精度保証
enzymatic assay	酵素的測定法
rate assay	速度分析法
end point assay	終点分析法
metrological traceability chain	計量学的トレーサビリティ連鎖
uncertainty	不確かさ
primary reference measurement procedure	一次基準測定操作法
primary reference material	一次標準物質
secondary reference measurement procedure	二次基準測定操作法
secondary reference material	二次標準物質
trueness	真度
validation	妥当性確認
reference measurement standard	参照測定標準物質
reference standard	常用参照標準物質
reference material	標準物質
certified reference material	認証標準物質
standardization	標準化
measurement system	測定体系
transferability	伝達性
consensus method	常用標準法

Molecular Biology, Genetic Testing（遺伝子検査学）

英語用語	解説
autosomal	常染色体(性)の
base pair	塩基対
chromosome	染色体
coding region	翻訳領域, コート領域
codon	コトン
deletion	欠失
gene targeting	標的遺伝子組換え
gene product	遺伝子産物
gene therapy	遺伝子治療
genotype	遺伝子型
germline	生殖系列
heterozygote	ヘテロ接合体
homologous	相同的な
homozygote	ホモ接合体
hybridization	ハイフリット形成(法)
phenotype	表現型
point mutation	点突然変異
quantitative PCR	定量的 PCR
restriction enzyme	制限酵素
reverse transcriptase	逆転写酵素
tissue-specific expression	組織特異的発現

transcription	転写
transgenic mouse	遺伝子導入マウス
translation	翻訳
untranslated region	非翻訳領域

Pathology（病理学）

英語用語	解説
basophilic	好塩基性の
benign	良性の
biopsy	生検
carcinoma	癌腫
cuboidal	立方状の
embedding	包埋
eosinophilic	好酸性の
H.E.	ヘマトキシリンエオジン
histiocyte	組織球
immunohistochemistry	免疫組織化学
invasion	浸潤
malignant	悪性の
mitosis	有糸分裂
picnosis	核濃縮
pleomorphism	多形性
sarcoma	肉腫
spindle	紡錘形の
tumor	腫瘍

Parasitology（寄生虫学）

英語用語	解説
amebiasis	アメーバ症
anal swab	肛囲検査
anisakiasis	アニサキス症
autoinfection	自家感染
black water fever	黒水熱
cestode, tapeworm	条虫
chyluria	乳糜尿
circumoval precipitin test	卵周囲沈降テスト
creeping eruption	皮膚爬行症
cutaneous larva migrans	皮膚幼虫移行症
definitive host	固有宿主
elephantiasis	象皮病
embryonated egg	幼虫包蔵卵
eosinophilia	好酸球増加症
eosinophilic granuloma	好酸球性肉芽腫
erratic parasitism	迷入
erythrocytic schizogony	赤血球内発育
feces	糞便

final host	終宿主
free living	自由生活
helminth	蠕虫
heterotopic parasitism	異所寄生
hydrocele	陰嚢水腫
infective larva	感染幼虫
intermediate host	中間宿主
larva migrans	幼虫移行症
life cycle	生活史
Loffler's syndrome	レフレル症候群
metastasis	転移
nematoda	線虫
parasite	寄生虫
parasitemia	虫血症
placental infection	胎盤感染
protozoa	原虫
reservoir host	保虫宿主
sexually transmitted disease, STD	性感染症
skin snip	皮膚切除
splenomegaly	脾腫
trematoda	吸虫
undefinitive host	非固有宿主
visceral larva migrans	内蔵幼虫移行症
zoonosis	人畜共通感染症

Biochemistry（生化学）

英語用語	解説
Amino acid	アミノ酸
Carbohydrate	糖質
Catalyst	触媒
Chemical kinetics	反応速度論
Cholesterol	コレステロール
Electron transport chain	電子伝達系
Enzyme	酵素
Fatty acid	脂肪酸
Gluconeogenesis	糖新生
Glycolysis	解糖系
Lipid	脂質
Metabolism	代謝
Oxidative Phosphorylation	酸化的リン酸化
Protein	タンパク質
Reduction / Oxidation = Redox	酸化還元
Respiratory chain	呼吸鎖
Substrate	基質
Triacylglycerol	トリアシルグリセロール
Tricarboxylic-acid cycle = Citric acid cycle	トリカルボン酸回路=クエン酸回路
Urea cycle	尿素回路

Clinical Microbiology（臨床微生物学）

英語用語	解説
acute hemorrhagic conjunctivitis	急性出血性結膜炎
acute viral infection	急性ウイルス感染
aerial hypha	気中菌糸
agar plate medium	寒天平板培地
airborne transmission	空気感染
animal virus	動物ウイルス
asexual spore	無性胞子
autoclave	オートクレーブ
biofilm	バイオフィルム
biotype	生物型
capsid	カプシッド
capsule	莢膜
cell wall	細胞壁
chicken pox	水痘
chronic infection	慢性感染
clamp connection	かすがい連結
coccus	球菌
contact infection	接触感染
contamination	汚染
dermatophytosis	皮膚糸状菌症
disinfection	消毒
disk diffusion method	ディスク拡散法
endotoxin	内毒素
exotoxin	外毒素
fungus	真菌
genotype	遺伝子型
Gram stain	グラム染色
horizontal infection	水平感染
identification	同定
Koplik spot	コプリック斑
latent infection	潜伏感染
live vaccine	生ワクチン
minimum inhibitory concentration	最小発育阻止濃度
mucoid colony	ムコイド集落
mycotoxin	カビ毒
negative stain	陰性染色
persistent infection	持続感染
sexual spore	有性胞子
standard precautions	標準予防策

Laboratory for Clinical Immunology（免疫検査学）

英語用語	解説
acute reactive protein	急性期反応蛋白
acquired immunity	獲得免疫
adaptive immunity	適応免疫
allergy	アレルギー
antibody	抗体
antigen presentation	抗原提示
autoantibody	自己抗体
autoimmune regulator (AIRE) gene	自己免疫調節遺伝子
autoimmunity	自己免疫
B cell	B 細胞
BCR(B cell receptor)	B 細胞受容体
chemokine	ケモカイン
complement	補体
contact hypersensitivity	接触過敏症
cytokine	サイトカイン
cytotoxic T cell	細胞傷害性 T 細胞
dendritic cell	樹状細胞
delyed type hypersensitivity	遅延型過敏症
Epstein-Barr virus	EBウイルス(エプスタイン バー ウイルス)
EIA (Enzyme Immunoassay)	酵素免疫測定法
epitope	エピトープ(抗原決定基)
human immunodeficiency virus	ヒト免疫不全ウイルス
immunoglobulin	免疫グロブリン
inflammation	炎症
interleukin	インターロイキン
Janus kinase	ジャックキナーゼ
lymphocyte	リンパ球
major histocompatibility complex	主要組織適合性抗原
mast cell	マストセル、肥満細胞
natural immunity	自然免疫
natural Killer (NK) cell	ナチュラルキラー細胞
pattern recoginition receptor	パターン認識受容体
plasma cell	形質細胞
regulatory T cell	制御性 T 細胞
T cell	T 細胞
TCR (T cell receptor)	T 細胞受容体
thymus	胸腺
toll like receptor	トール様受容体
tumor necrosis factor	腫瘍壊死因子

臨床検査技師のための英会話

1. Blood sampling

1. Put your arm on the elbow rest please.
2. Give me your hand please.
3. Please relax. It takes a few minutes.
4. Hold this ball or rubber object please.
5. Please relax your hand.
6. Please take a rest if you feel uncomfortable after the test.
7. Please check the request form and prepare the tube(s) to match the tests.
8. Please check the name of patient, patient ID and request form.
9. Please raise your right (left) hand.
10. When did your health problem start?
11. Do you have any pain?
12. What is the pain like?
13. Do you feel numbness in your arm?
14. The bruise will disappear in a week.
15. A cold compress will work for your pain.
16. You can come to us whenever you feel sick.
17. The clinical laboratory doctor will talk with you. Please wait in this room. I will call him for you now.

2. Blood Pressure

1. Please rest for about 10 minutes before doing a test.
2. Please don’t talk and don’t make any movement during the test.
3. How many hours did you sleep last night?
4. Please record the result in the report form.

3. ECG

1. I will apply a gel to your skin.
2. I will attach the electrodes to your chest.
3. Please remove all jewelry from your neck, arms, and wrists.
4. You will be given a cloth or paper covering to use during the test.
5. Please lie on the bed.
6. Please lie very still and breathe normally during the test.
7. Please hold your breath and do not talk during the test.
8. This test will be finished within 5 minutes.

4. EEG

1. Please don't drink coffee or caffeine on the day of the test.
2. Please avoid using hair styling products (hairspray or gel) on the day of the test.
3. I will apply a gel to your skin.
4. I will attach about 20 electrodes to your scalp.
5. Now the test is finished, I will remove the electrodes.

5. Spirometer

1. Please wear loose comfortable clothing.
2. Do not take any medicine before the test.
3. Did you exercise before coming to the test?
4. Please don’t eat a large meal before doing the tests.
5. Please don't smoke prior to the test.

6. Please take a rest if you feel uncomfortable after the test.

6. Ultrasonic

1. Please wear loose comfortable clothing.
2. Please lie on the bed.
3. Please avoid eating for about 8 to 12 hours before testing.
4. I am cleaning your skin and I will a water-based gel.

7. MRI

1. Sit on the chair please**.**
2. Do you have allergies to any kind of drug or food?
3. Do you have any serious diseases?
4. Please remove jewelry and accessories because they can interfere with the test.
5. Do you have any electronic devices in your body?
6. Please move your head to the left (or right).
7. Could you please change your clothes?

8. Hematology

1. Please run the internal and external quality controls before running the sample.
2. Please match the barcode and name of the sample with patient's request form.
3. Please check the type of samples and the tests in the request form.
4. Please make the blood smear for all cases (samples) and don't forget to label the slide.
5. Please keep the samples at the proper temperature.
6. Please store the reagents as recommended by the manufacturer.

9. Immunology

1. Please match the barcode and name of the sample with patient's request form.
2. Please check the type of samples and the tests in the request form.
3. Please keep the samples at the proper temperature.
4. Please store the reagents as recommended by the manufacturer.
5. Please read the reaction at the indicated time point.
6. Please do the positive and negative control material in parallel with the samples.

10. Microbiology

1. Please clean the experimental area first.
2. Please culture the bacteria from the samples with aseptic technique.
3. When culturing microorganisms, you must practice aseptic technique.
4. Please wipe your bench top with the disinfectant to sterilize the surface area.
5. Please flame the inoculating loop until it is red hot.
6. Could you identify these bacteria by using colony morphology, cell morphology and gram staining?
7. When you streak the bacteria, please drag the loop across the media gently being careful not to poke a hole in the media.
8. For the viral culture, please perform the experiment according to their biosafety level (BSL).
9. Please protect your self from the transmission of all infectious agents.
10. Please discard the biologically hazardous substances in the tasks in which potentially infectious material is handled.
11. Please wash and dry your hands before and after contact with a specimen.
12. Please wear gloves, laboratory coats/gowns, closed shoes and masks or goggles when doing the experiment.

11. Pathology

1. Please label type of specimen, patient's name and ID on the slide.
2. Please process and prepare the slide in the flame hood to avoid the direct exposure of formaldehyde.
3. Please wear gloves and gowns and don't contact specimens directly.

12. Cytopathology

1. Please label type of specimen, patient's name and ID on the slide.
2. Please spin down the cells in the fluid sample onto the slide.
3. Please fix and stain slide.

13. Genetic analysis

1. Please clean the bench and pipettes before doing the experiment.
2. Please don't touch the sample directly without gloves.
3. Please separate the pre-PCR and post-PCR areas to prevent the carry-over contamination.
4. Please extract RNA from the sample without DNA contamination.
5. When you extract the RNA, please use the RNase free water and tips.
6. Please run the negative and positive control parallel with the sample.

14. Informed consent

1. The project aims to study the effect of.....
2. Our project was approved by the ethics Committee for Human Rights related to experimentation.
3. You were selected as a possible participant in this study because.....
4. This study will provide preliminary information in.....
5. Hopefully, this may well shed new light on the pathology of disease.
6. The subjects will have approximately 5 ml of venous blood drawn.
7. If you want to quit this project, you can inform the researchers without any penalty or loss of benefits.
8. The subject will feel a bit of pain during the puncture; in some cases, their vessel may be traumatized resulting in a bruised skin, but there is nothing harmful to their body. The vessel will recover after 2-5 days of healing.
9. 5 ml of peripheral blood collection does not cause anemia or a stroke.
10. We will keep all of your data confidential and it will be disclosed only with your permission.
11. If you have any questions, please ask us.
12. If you have any additional questions later, please contact...(phone number or address.)
13. If you decide to participate, please sign your name.
14. You will be given a copy of this informed consent to keep.

15. Clinical Chemistry

1. A spectrophotometer should be switched on. Then please wait for 30 minutes before using.
2. Please do not touch apparatus during the operation of automated analyzer.
3. If serum is used, preserve it in a refrigerator immediately.
4. Measurement of enzyme activity is influenced by temperature changes.
5. An enzyme reaction is influenced by the concentration of substrate.
6. Separation time changes with the flow rate of eluent in HPLC.
7. The reaction of a sample and a reagent does not progress unless you mix it well.
8. In a chemical reaction, the reaction velocity changes with pH.

References

Anderson, Fred E. (1993). The Enigma of the College Classroom: Nails That Don't Stick Up. In Paul Warden (Ed.), *A Handbook for Teaching English at Japanese Colleges and Universities*. (pp. 101-110). New York: Oxford University Press.

Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching and assessing: A revision of Bloom's Taxonomy of educational objectives: Complete edition*. New York: Longman.

Bauers, Deborah, (2009) Teaching tips: Pros and cons of the lecture format. Retrieved February 4, 2011, from http://www.helium.com/items/1480992-what-are-the-pros-and-cons-of-using-the-lecture-method-in-the-classroom

Bloom, Benjamin.S., Englehart, M. D., Furst, E. J., Hill, W. H. & Krathwohl D. R. (1956) Taxonomy of educational objectives. Handbook I: Cognitive Domain. New York: David McKay.

Bonwell, Charles C. - Eison, James A. (1991-09-00) Active Learning: Creating Excitement in the Classroom. ED340272

Connor, Suzy. (2009). English Injection, Surgically Enhanced ed. Self published: Stanton Press

Fossett, Bonnie & Nadler-Moodie. (1996) *Psychiatric Aspects of General Patient Care*. South Easton MA: Western Schools Press.

Forehand, Mary. (2005). Bloom's taxonomy: Original and revised.. In M. Orey (Ed.), Emerging perspectives on learning, teaching, and technology. Retrieved February 15, 2011, from http://projects.coe.uga.edu/epltt/

Grunert O'Brien, Judith, Millis, Barbara J. & Cohen, Margaret. (2008) *The Course Syllabus: a Learning Centered Approach 2nd ed*. (pp.) San Francisco: John Wiley & Sons, Inc.

Hofmann, Thomas R. (1989) Showing Pronunciation in EFL Teaching. *Journal of the Simplified Spelling Society (*1) 13-19 later designated J10.

Hufford CDR Dennis & Holman, CDR John. Dynamic Lectures Madigan Army Medical Center Edited for web page 18 July 1999 Retrieved February 4, 2011, from http://www.usafp.org/Fac_Dev/Teaching_Topics/Dynamic%20Presentations/Dynamic-Lecture-Handout.htm

Matejka K., and L. Kurke.1994. Designing a great syllabus. *College Teaching*. 4(3):115-117

McKeachie, W., J., (1986). *Teaching tips: A guidebook for the beginning college teacher.(8th ed.)*. Lexington, MA: Heath.

Michaelsen, Larry K., Parmelee, Dean X. McMahon, Kathryn K. and Levine, Ruth E.. (2008). *Team-Based Learning for Health Professions Education*. Serling, Virginia: Stylus Publishing,LLC.

National Eating Disorders Association (2008) NEDA TOOLKIT for Educators. Retrieved February 15, 2011, from www.nationaleatingdisorders.org

Pollio. R.W.,(1984) What students think about and do in college lecture classes. *Teaching Learning Issues* No. 53. Knoxville: University of Tennessee, Learning Research Center.

Reynolds, Garr. (2008.) *Presentation Zen: Simple Ideas on Presentation Design and Delivery*. Berkeley CA: Peachpit Press.

Rickard, H., Rogers, R,. Ellis, N.R., & Beidleman, W. (1988). Some retention, but not enough. Teaching of Psychology, 15, 151-152.

Ruhl, K. L., Hughes, C.A., & Schloss, P. J. (1987, Winter) Using the pause procedure to enhance lecture recall. *Teacher Education and Special Education*, 10, 14-18.

Silberman Mel. (1996). *Active Learning: 101 Strategies to Teach Any Subject*. (pp.) Needham Heights MA: Allyn & Bacon

Tokatli A.Mine & Keşli Procedia. (2009). Social and Behavioral Sciences 1, 1491–1494

Teaching Support Services (Fall 2003) *Learning Objectives: A Basic Guide*. Guelph, Ontario: University of Guelph, Retrieved February 13, 2011 from http://www.tss.uoguelph.ca/resources/idres/learningobjectives1.pdf

Verner, C., & Dickinson, G., The lecture: And analysis and review of research. *Adult education*, 17 (2), 85-90.